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THESIS

COMPARATIVE ANALYSIS OF GOVERNMENT AND PRIVATE SECTOR ADP ACQUISITION

by

Stephen L. LaRue
James M. DeLorenzo

March 1984

Thesis Co-Advisors: Norman Lyons
Dan Boger

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This model delineates the cost elements germane to the approval and acquisition phases of the life cycle management process. This concluded the initial phase of an effort towards a comparison of government and private sector acquisition processes. Further analysis of these acquisition processes is recommended for continued model refinement, including decision support system applications.

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Comparative Analysis of Government and Private Sector ADP Acquisition

by

Stephen L. LaRue
Lieutenant Commander, SC, United States Navy
B.S., U. S. Naval Academy, 1972

and

James M. DeLorenzo
Lieutenant Commander, SC, United States Navy
B.S., Quinnipiac College, 1973

Submitted in partial fulfillment of the
requirements for the degree of

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from the

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March 1984

NAV
MONTEREY, CALIFORNIA 93943

ABSTRACT

This thesis has identified the primary regulatory and administrative requirements related to the acquisition of major automated information systems (AIS). In addition, case analysis was performed on current ADP projects to evaluate the application of acquisition directives and to obtain pertinent cost data for model development. A baseline model was created from available data using the Interactive Financial Planning System (IFPS). This model delineates the cost elements germane to the approval and acquisition phases of the life cycle management process. This concluded the initial phase of an effort towards a comparison of government and private sector acquisition processes. Further analysis of these acquisition processes is recommended for continued model refinement, including decision support system applications.

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I. INTRODUCTION

The Federal government has experienced a tremendous growth in the use of computers in virtually all phases of its operations. The December 31, 1981 GSA Management Information System inventory report on ADP equipment (ADPE) identified over 300,000 machines residing in 4,434 installations under the control of 61 defense and civilian agencies within the executive branch. The purchase price represented by the more than 300,000 machines was almost $6 billion dollars. [Ref. 1:7,11] Presently, there is no function in the Federal government that is not dependent on the smooth functioning of ADP resources. The government depends on ADP resources and commits significant budgetary amounts to acquiring and operating those resources. Of interest, however, is the fact that approximately 41 percent of the Federal data processing budget is allocated to personnel resources as compared to only 36 percent of the private sector budgets. Also, the private sector allocates less of its processing dollar (10 percent) to software than the Federal government (18.8 percent) but spends more on hardware - 31 percent for the private sector versus 20.8 percent for the Federal government. [Ref. 2:i-ii]

Of the executive branch agencies, the Department of Defense (DOD) has become the largest consumer of computer hardware and services in the government. In total, DOD represents 47 percent of both the total number of installed machines and total purchase price. Table I provides a further breakdown by service.

Rapid advances in Automated Data Processing (ADP) technology coupled with the time consuming Federal acquisition process have resulted in obsolete equipment, procedures, and

TABLE I

ADP Machines by Service

Service	% of Installed Machines	% of Purchase Price
Air Force	22	21
Army	13	13
Navy	9	10
DOD Agencies	3	3

support structures. The state of obsolescence is emphasized by the fact that expenditures during the past fiscal year have exceeded $4 billion dollars for acquisition and operation of DOD general purpose systems as compared to $6 billion for purchase of equipment for the whole executive branch up to 1981. The Department of the Navy, in particular, has recently been cited by the Grace Commission (President's Private Sector Survey on Cost Control) as being on the brink of disaster....

> Installed in the mid 1960's and early 1970's, they (Navy computers) are, for the most part, fifteen to twenty years old. The technology and operating systems are obsolete, the equipment is difficult and expensive to maintain, and frequent downtime causes loss of productivity in user areas.
>
> This is painfully evident in the Navy Supply System, which must depend on computers that are over-burdened and increasingly less capable of coping with demands made on them. If that system should suddenly break down because of the inability of its computers to handle the workload, the flow of ammunition and spare parts could halt, the Navy's operational capability would be jepardized, and readiness could suffer. [Ref. 2:127]

Computer technology has become central to the Navy's ability to perform its mission and a closer look at the Navy's way of doing business is warranted. This thesis is the first phase of a research effort directed toward a comparative analysis of the current ADP acquisition process utilized by the Federal government with that of the private sector.

A. STATEMENT OF THE PROBLEM

The Navy's problems are complicated by a complex and often conflicting regulatory and bureaucratic environment which directs and controls ADP acquisition procedures and use. In the past, this environment has almost completely obscured the more important function of using the ADP resources to effectively improve the performance of people and organizations. Specifically, the current acquisition process negates the Navy's ability to take advantage of a rapidly developing technology to improve efficiency, economy and readiness. As an example, it is estimated that industry is producing a new generation of computer hardware every seven years but the average completion period required for the acquisition of major ADP projects in the Navy is 11.5 years. [Ref. 2:147] While one of the most regulated areas has traditionally been the approval and acquisition processes for computer hardware, the current regulatory guidance and policy initiatives have redirected management efforts to attain the most economic arrangements possible for the life of the system.

Maximum practicable competition and appropriate life cycle management principles are the primary tools utilized to counter the rising costs of today's computer systems. A key assumption in life cycle cost analysis is the identification of all cost drivers germane to the acquisition. "If

these cost drivers are not considered, then the lowest total life cycle costs are sacrificed in the name of competition." [Ref. 3:59] In addition, lost opportunity costs are incurred by the detailed, time consuming, and sometimes conflicting administrative and regulatory requirements.

This thesis addresses the problem that the application of current ADP acquisition policy overlooks several cost drivers and fails to adjust system life cycle costs by the lost opportunity costs that result from the extended procurement approval lead time.

B. OBJECTIVE AND SCOPE

It is the objective of this thesis to document the existing Automated Data Processing (ADP) acquisition environment and its application to recent large scale Navy acquisitions. Additionally, utilizing a case study methodology, this thesis will utilize Navy data to develop a baseline model that future research efforts can expand to quantify existing differences between DOD and private sector acquisition philosophies and procedures. Specific study activities included:

- Interviewing key executives within GSA, DOD, CNO, NAVDAC, and ADPSC.
- Reviewing reports and testimony by the General Services Administration (GSA), House Surveys and Investigations Staff (HSAIS), General Accounting Office (GAO), Grace Commission, National Academy of Sciences, and outside consultants.
- Reviewing existing regulatory/instructional guidance that directs or influences the acquisition process.
- Examining prior and current Navy acquisitions to formulate case study data.
- Identification of cost factors and risks.

- Identification of intangible factors in computer selection.
- Formulation of a baseline model derived from the case study data, outside readings, and academic consultation.
- Suggest process improvements.
- Identification of future areas of study to continue this effort.

C. LIMITATIONS

The Department of the Navy divides its computer systems into two categories: embedded systems and non-tactical ADP. Embedded systems are typically integrated into and form a part of larger weapons systems. These embedded systems are acquired and managed by the hardware systems commands under the guidance of DOD Directive 5000.29. This thesis will not address embedded systems. Non-tactical ADP equipment falls under the aegis of the Naval Data Automation Command (NAVDAC). These systems are primarily concerned with general purpose business applications and range from microcomputers and word processors to mainframes. This thesis will be directed toward the portion of non-tactical ADP systems that are classified as major automated information systems (AIS). A major AIS is "A collection of functional user and ADP personnel, procedures, and equipment (including ADPE) which is designed, built, operated and maintained to collect, process, store, retrieve, and display information." [Ref. 4]

D. ASSUMPTIONS

Private sector companies do not equal the Navy in expenditures, number of employees, number and location of facilities or diversity of operations. However, within the Navy,

there are many autonomous service units (e.g. SYSCOMS) with their own management hierarchies which closely parallel the business philosophy of many large private sector organizations. These large companies, like the Navy, manage labor, material, and dollars to fulfill their corporate objectives. In doing so, they share with the Navy a strong dependence on information processing as a business tool. The acquisition processes utilized by both involve an "integrated set of management control, planning, accountability and specific procurement practices working together as a whole" [Ref. 5:I-3], although differing as to degree. Life cycle management of AIS most closely parallels the private sector computer acquisition philosophy and should provide a sound basis for future thesis efforts to complete the comparative analysis of governmental and private sector acquisition procedures.

E. ORGANIZATION OF THE STUDY

This thesis addresses the environment surrounding the non-tactical ADP acquisition process. Chapter II provides a brief historical perspective on Federal acquisition and identifies the primary regulatory, policy, and organizational elements of the process. Chapter III discusses the approval and acquisition processes required by regulation and policy and delineates the processes as observed through the actual research conducted. Chapter IV presents a summary analysis of three Navy acquisitions, identifies relevent cost factors for use in a composite model, and provides the composite model of the approval and acquisition phases of government procurement. The final chapter summarizes and critiques the model development process and presents potential uses for the model. Additionally, conclusions concerning the acquisition process as observed

and recommendations for future research efforts on this subject are presented.

II. ADP ACQUISITION POLICY AND ORGANIZATION

The current Federal Procurement system has been characterized as a complex and conflicting collection of statutes, executive orders, policies, regulations, standards, organizations, and operations. In 1978 and 1979 the Office of Federal Procurement Policy (OFPP) conducted a survey of 19 agencies and found:

- 485 offices regularly issuing procurement regulations.
- 877 different sets of regulations, including directives, bulletins, instructions, and similar documents.
- 64,100 pages of regulations in effect.
- 21,900 new or revised pages issued each year.
- Proliferation greatest in large agencies with multiple authority levels.
- 83 percent of all regulations issued by levels below agency headquarters. [Ref. 6:8]

This chapter provides the foundation for analysis of the ADP Acquisition Process by providing a general historical perspective of Federal acquisition and by describing the policy and organizational environments oriented toward ADP acquisition.

A. HISTORICAL PERSPECTIVE

From the time the Second Continental Congress established the Commissary General in 1775, Government procurement has been a focal point of attention of public officials as well as private citizens. Today's system faces many of the same considerations and concerns faced by the Commissary General in 1775: maximize competition, obtain fair prices, and assure accountability for the expenditure of public

funds. Unfortunately, the policies and procedures enacted to accomplish these objectives have usually been developed in a haphazard manner as patchwork solutions to special problems of the times. [Ref. 6:133]

The first law regulating Federal procurement was passed by the Second Congress in 1792 and established that all purchases for the Army would be made by the Treasury Department. In 1861, Congress enacted a law that required Government purchases be advertised. This law, in effect, established a Congressional mandate to maximize competition and accountability through the use of formal advertising. The 1861 statute, ammended in 1910, applied to the military until 1948; to the General Services Administration until 1949; and to other executive agencies until 1965. The law, section 3709 of the Revised Statutes, still applies to purchasing activities not in the executive branch.

During World War I, the government found its normal procurement procedures were too inflexible and many procurement procedures were relaxed or eliminated, including formal advertising. The Government's first involvement in the procurement of technological products occurred after World War I with the aviation industry. Aircraft procurement programs were granted the authority to weigh performance as well as price in contract awards by the Air Corps Act of 1926. The Vinson-Trammel Act of 1934 imposed profit limitations on contracts for aircraft and naval vessels and was brought about by the identification of excessive wartime profiteering. This factor also resulted in the Renegotiation Law of 1941 which allowed the Government to renegotiate contracts in order to eliminate excess profits.

Experiences in World War II resulted in the passage of the Armed Services Procurement Act of 1947. This act stated a preference for formal advertising but authorized the use of negotiations under 17 exceptions. It resulted in the

Armed Services Procurement Regulations (ASPR) which governed military procurement, set limitations on the use of certain types of contracts, and emphasized the importance of small business participation in government contracting. The ASPR is now officially titled the Defense Acquisition Regulation (DAR).

In 1949, Congress passed the Federal Property and Administrative Services Act which established the statutory basis for procurement procedures for civilian agencies. The General Services Administration (GSA) was assigned the responsibility of controlling procurement policy and certain procurement operations with exemptions for certain agencies and activities.

The depression of the 1930's resulted in the first Federal attempts to promote socio-economic goals through the procurement process. These included the Davis-Bacon Act, setting minimum wages on Federal construction contracts; the Walsh-Healy Act, upgrading wages and employment conditions on Federal supply contracts; the Miller Act, requiring payment bonds to protect subcontractors and material suppliers on Federal construction jobs; and the Copeland Act, preventing salary kickbacks on Federal construction jobs. The Buy America Act of 1933 promoted domestic business and labor interests by giving preference to domestic sources for Federal purchases.

Since World War II, small business and labor surplus area assistance and preference programs have been intensified, labor standards laws have been extended to employees of service contractors, equal employment opportunity programs have been established and enforcement techniques have become more stringent. Additionally, the Federal procurement system has been used to further programs relating to: (1) discrimination against women and the aged; (2) health and safety regulations; (3) hard core

unemployment (4) minority enterprises; (5) wage and price controls; (6) distribution of Federal work; and (7) environmental pollution. [Ref. 7:6-9]

B. THE REGULATORY ENVIRONMENT

The regulatory and policy environment within which the ADP Acquisition Process functions is comprised of the following:

- Public Laws
- Executive Orders
- Office of Management and Budget Circulars
- Federal Procurement Regulations
- Federal Property Management Regulations
- Office of Federal Procurement Policy Publications
- Federal Information Processing Standards
- Defense Acquisition Regulations
- Department of Defense Directives and Instructions
- Secretary of the Navy Instructions

1. Public Laws

There are two basic statutory provisions governing contracting and providing authority to issue regulations:

- Armed Services Procurement Act of 1947 and
- Federal Property and Administrative Services Act of 1949.

The Armed Services Procurement Act applies to DOD while the Federal Administrative Services Act is directed toward civil agencies.

Since 1965 four additional laws have been enacted which address ADP acquisition and management:

a. PL 89-306

Public Law 89-306, the Brooks Bill, was passed in October 1965 with the intent "to provide for the economic and efficient purchase, lease, maintenance, and utilization of automatic data processing equipment by Federal departments and agencies." [Ref. 8:II-4] The bill was enacted as an amendment to Title I of the Federal Property and Administrative Services Act and, without regard to the Armed Services Procurement Act, encompassed DOD activities.

Legislative hearings and reports concerning PL 89-306 indicate that the intent was not to depart radically from previous government policy or to create new policies but simply to promote efficient and economic acquisition of ADP by defining basic organizational responsibilities. To that end, the basic authorities of OMB, GSA, Commerce and user agencies were delineated as follows:

> (a) The General Service Administration (GSA) shall provide for economic and efficient procurement of ADP equipment.
>
> (b) The National Bureau of Standards (NBS) shall provide ADP scientific and technical advice to agencies and GSA, and establish Federal ADP standards.
>
> (c) The Office of Management and Budget (OMB) shall exercise policy and fiscal control over GSA and NBS in the discharge of their responsibilities.
>
> (d) Individual agencies shall determine their own ADP requirements including specification development and selection of hardware type and configuration. [Ref. 7:9]

b. PL 93-400

Public Law 93-400, the Office of Federal Procurement Policy Act, was passed in August 1974 and directed the establishment of the Office of Federal Procurement Policy (OFPP) within OMB. OFPP was chartered to

"provide overall direction of procurement policies, regulations, and forms." [Ref. 6:2] With the passage of this law, Congress again emphasized its policy of promoting economic and efficient acquisition and emphasized the utilization of competitive procurement methods to the maximum extent practicable.

c. PL 96-83

Public Law 96-83, the Office of Federal Procurement Policy Amendments of 1979, reauthorized OFPP for an additional four years until October 1983 and directed OFPP to develop and propose a uniform, comprehensive procurement system for use by Federal agencies without regard to current barriers or statutory requirements. Additionally, this amendment signaled a shift in Congressional policy to, first, promote the use of full and open competition, and second, establish policies and procedures to ensure the timely acquisition of quality goods and services at the lowest reasonable cost.

d. PL 96-511

Public Law 96-511, the Paperwork Reduction Act of 1980, grants OMB the authority to "develop and implement Federal information policies, principles, standards, and guidelines . . . and oversee the acquisition and use of ADP, telecommunications, and other technology for managing information resources." [Ref. 8:II-5] The law legislates the establishment of the Office of Information and Regulatory Affairs as the focal point for leadership and central direction of Federal information resource management.

2. Executive Orders

Executive orders impact the ADP policy environment by directing organizational roles and responsibilities. The following executive orders are of primary interest:

a. Executive Order 11717

Executive Order 11717, issued May 9, 1973, transferred certain functions with respect to policy control over ADP from OMB to GSA. Additionally, OMB's responsibility for approving ADP standards was transferred from OMB to the Department of Commerce. OMB retained general management oversight responsibility, fiscal authority, and policy formulation responsibility for ADP.

b. Executive Order 11893

In 1975, Executive Order 11893 transferred most of the policy functions transferred to GSA by Executive Order 11717 from GSA back to OMB. However, GSA still retained ADP policy control responsibilities.

c. Executive Order 12352

Executive Order 12352, issued March 17, 1982, directed heads of executive agencies to institute nine Federal procurement reform measures which focused on making procurement more effective in support of mission accomplishment. Additionally, DOD, GSA, and NASA were directed to consolidate their common procurement regulations into a single, simplified Federal Acquisition Regulation (FAR) by the end of calendar year 1982. Presently, the projected FAR implementation date is April 1984. Finally, Executive Order 12352 directed OMB to provide, through the Office of Federal Procurement Policy (OFPP), broad policy and leadership guidance required to implement the Executive Order. In

effect, this resulted in introducing a third organization, OFPP, into the ADP policy formulation and control arena.

3. OMB Circulars

OMB communicates policy and procedural guidance through OMB Circulars. Specific circulars that have impacted aspects of ADP management include:

a. OMB Circular A-11

OMB Circular A-11, dated 25 May 1978, prescribes policies and procedures for the preparation and submission of annual budget estimates. Section 24.7 of the circular specifically addresses the acquisition and operations of ADP systems.

b. OMB Circular A-71

OMB Circular A-71, published March 6, 1965, defines the responsibilities of executive agencies for the administration and management of ADP activities. A-71 recognizes the responsibility of OMB for the overall leadership and coordination of ADP activities. Additionally, A-71 identifies the responsibility of GSA to achieve increased cost effectiveness in the selection, acquisition, and utilization of ADP equipment.

c. OMB Circular A-76

OMB Circular A-76, published March 29, 1979, establishes the policies for acquiring commercial or industrial products (not exclusively ADP) for government use. A-76 sets forth the basic policy of reliance on the private sector to supply the Government's needs except where it is not in the Government's best interests.

d. OMB Circular A-109

OMB Circular A-109, dated April 5, 1976, describes the procedures to be followed in the acquisition of major systems by Federal agencies. Problems have arisen in implementing A-109 provisions to ADP acquisitions as conflicts exist between the approaches of A-109 and PL 89-306. This problem has been compounded by the absence of GSA procedural guidance for implementing A-109.

4. Federal Procurement Regulations (FPR)

GSA issues the Federal Procurement Regulations (FPR) under the authority of the Federal Property and Administrative Services Act of 1949. The FPR is the civilian agency equivalent of the Defense Acquisition Regulations (DAR). Certain specialized sections of the FPR are mandatory for use by DOD including those sections applicable to data processing and ADP acquisition.

5. Federal Property Management Regulations (FPMR)

The Federal Property Management Regulations (FPMR) are issued by GSA under the authority of the Federal Property and Administrative Services Act of 1949. They provide specific guidance for the management and operation of equipment and activities. The sections relevant to ADP and Telecommunications management are FPMR 101-35 (Automatic Data Processing and Telecommunications Management Policy), FPMR 101-36 (Automatic Data Processing Management), and FPMR 101-37 (Telecommunications Management) of Subchapter F.

6. Defense Acquisition Regulations (DAR)

The Defense Acquisition Regulations (DAR) are issued by the Department of Defense as the principal regulatory guidance on all aspects of acquisition. The DAR governs all

DOD purchases and contracts for supplies, services, and systems but is subordinate to the FPR for matters of ADP acquisition.

7. OFPP Publications

Under the authority granted by PL 93-400 and PL 96-83, OFPP has become the central source for procurement policy direction. In addition to pamphlets published to enhance the understanding of the intent and application of OMB Circular A-109, OFPP has been tasked under PL 96-83 to develop a proposal for a Uniform Procurement System. To this end, OFPP has proposed the Federal Acquisition Regulation (FAR) to replace the FPR and DAR in April 1984.

8. Federal Information Processing Standards (FIPS)

The Department of Commerce, National Bureau of Standards (NBS), is responsible for the Federal Information Processing Standards (FIPS) Program. Under this program, NBS is responsible for developing and issuing automatic data processing standards relating to numerous functions such as benchmarking, management of multi-vendor plug-compatible systems, standardization, and security.

9. DOD Directives and Instructions

There are presently thirty-seven DOD directives, instructions and manuals that address the acquisition, management, or utilization of ADP resources. Those most relevant to the acquisition and management of ADP are:

a. DOD Directive 5000.1 - Major Systems Acquisitions, dated March 19, 1980.

This directive implements the provisions of OMB Circular A-109 within DOD. It was initially intended to apply to those programs designated by the Secretary of

Defense as "Major Systems Acquisition Programs" but in its most recent revision has extended the application of these principles, where appropriate, to the acquisition of systems not designated as major.

b. DOD Instruction 5000.2 - Major Systems Acquisition Procedures, dated March 19, 1980.

This instruction provides supplementary procedures for implementing DODD 5000.1.

c. DOD Directive 5100.40 - Responsibility for the Administration of the DOD ADP Program, dated August 19,1975.

This DOD Directive establishes the DOD ADP Program and assigns responsibilities in accordance with the provisions of OMB Circular A-71. It designated the Assistant Secretary of Defense (Comptroller) as the Senior ADP Policy Official and directs the Secretaries of the Military Departments to designate a senior ADP policy official within their respective organizations.

d. DOD Directive 7920.1 - Life Cycle Management of Automated Information Systems (AIS), dated October 17, 1978.

This directive establishes the technical and functional policy governing the life cycle management of ADP. It applies the principles of DODD 5000.1 and OMB Circular A-109 to all major AIS. The Assistant Secretary of Defense (Comptroller) is delegated the authority and responsibility for integrating and unifying AIS management within DOD.

e. DOD Instruction 7920.2 - Major Automated Information Systems Approval Process, dated October 20, 1978.

This instruction supplements DODD 7920.1 and establishes the review and decision processes and procedures required.

10. Secretary of the Navy Instructions

Specific Navy guidance for the acquisition, management and utilization of ADP resources is promulgated through instructions issued at the Secretarial level by the Deputy Under Secretary of the Navy for Financial Management (DUSN(FM)). Of the more than 40 SECNAV instructions listed in NAVDAC Instruction 5230.2 (dated 10 August 1981) as applicable to ADP, those most relevant to the acquisition and management of major Automated Information Systems (AIS's) are:

a. SECNAV Instruction 5000.1A - System Acquisition in the DON, dated 17 November 1978

This instruction implements the provisions and procedures required by DOD Directive 5000.1 and DOD 5000.2. In effect, this instruction implements the policies of OMB Circular A-109 within the Navy.

b. SECNAV Instruction 5230.6A - ADP Approval Authority and Acquisition Development Thresholds, dated 31 August 1981.

The purpose of this instruction is to establish policy, identify approval thresholds and authorities, and assign responsibilities with regard to ADP acquisition and system development actions. Of major importance in this instruction is the delineation of the organizational

responsibilities of the Commander, Naval Data Automation Command (NAVDAC) and the Director, Automatic Data Processing Selection Office (ADPSO).

c. SECNAV Instruction 5231.1A - Life-cycle Management of Automated Information Systems within the DON, dated 20 November 1979

The purpose of this instruction is to establish policies and responsibilities for the overall life-cycle management of Automated Information Systems (AIS) within the Department of the Navy. Its scope encompasses the design, development, conversion, implementation, modification, and operation of all AIS (excluding command and control and communications systems). DOD Directive 7920.1 and DOD Instruction 7920.2 are implemented within the DON through this instruction.

d. SECNAV Instruction 5236.1B - Contracting for Automatic Data Processing Resources, dated 15 October 1980.

SECNAV 5236.1B promulgates contracting policies for ADP resources in the DON. The policies specified by the instruction are supplemental to the Defense Acquisition Regulation (DAR), the Navy Contracting Directives (NCD), the Federal Procurement Regulations (FPR), and the Federal Property Management Regulations (FPMR). Of interest are those ADP resources identified as exempt from the provisions of the instruction:

- Specially designed ADP equipment.
- ADP resources acquired to directly support specially designed ADP equipment.
- Spare parts for government maintenance of ADP equipment.

- ADP resources acquired for Foreign Military Sales (FMS) customers.
- ADP resources acquired from other government activities or agencies.
- Contractor acquired ADP equipment retained by the contractor for contract performance unless:
  - i) Leased and full costs are paid by the government, or
  - ii) Title will pass to the government.
- ADP components of end item equipment.

C. FEDERAL ADP ACQUISITION MANAGEMENT ORGANIZATION

The complex network of laws, circulars, directives and regulations described in the preceding section reflects the elaborate organizational structure within the Federal government that is responsible for ADP policy development, implementation and management. Numerous organizations within the hierarchy interact with one another in the development and implementation of acquisition policy. Each organization influences the ADP acquisition process through defined roles resulting from prescribed authority. Figure 2.1 identifies those organizations within the Federal hierarchy that direct and control user agencies' attempts to fulfill their ADP requirements. The primary organizations which influence the process are:

1. Congressional Committees

Congress exercises broad legislative and oversight authority over the functions of Federal agencies and departments. Congressional committees are assigned responsibilities for monitoring selected activities, drafting pertinent legislation, and providing subsequent interpretation and oversight management of legislated requirements. The key Congressional committees that influence ADP acquisition are:

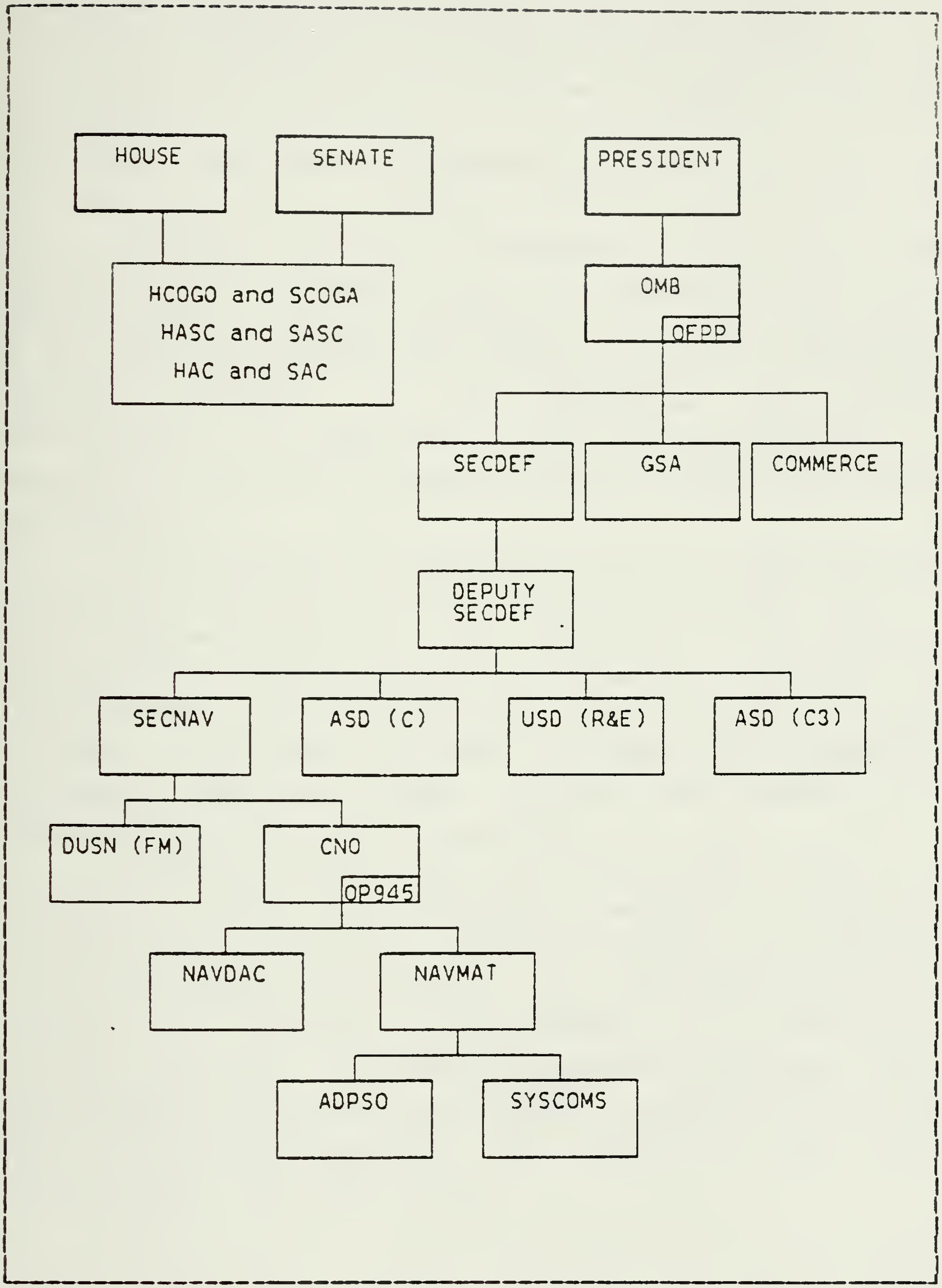


Figure 2.1 Federal ADP Policy Organization.

- House Committee on Government Operations (HCOGO).
- Senate Committee on Governmental Affairs (SCOGA).
- House and Senate Armed Services Committees (HASC and SASC).
- House and Senate Appropriations Committees (HAC and SAC).

Congress has become increasingly involved in ADP acquisition and management since the passage of PL 89-306 (Brooks Bill). Federal agencies and military departments must submit major policy and guidance, as well as proposed budgeted programs, to the committees for review. Additionally, the committees review ADP acquisitions in connection with their oversight authority of OMB's and GSA's activities.

Unfortunately, Congressional opinion has been that executive branch agencies have continually provided ineffective implementation of PL 89-306. Consequently, Congressional involvement has increased to the point of "interference" with the executive branch decision-making process. [Ref. 9:3] The HCOGO has exercised considerable management influence through GSA which has resulted in delays and holds on ADP acquisitions.

Congress feels that the demonstrated failure of executive agencies to effectively manage ADP resources requires that they provide extensive scrutiny and oversight of the ADP acquisition process. An interesting dichotomy exists in that the HCOGO and HAC disagree on the implementation of PL 89-306. The HCOGO has stressed achievement of PL 89-306 goals through maximum hardware competition while the HAC, and recently the SASC, has focused on lowest total overall system life-cycle cost.

2. OMB and OFPP

OMB is responsible for fiscal policy and general administrative management under the executive branch. Specific responsibilities for ADP were delineated under PL 89-306 and PL 96-511 for OMB. The Brooks Act (PL 89-306) assigned "fiscal and policy" authority to OMB but failed to clarify OMB's role in relation to GSA. Consequently, the overall leadership and coordination of executive branch activities concerning the selection, acquisition, utilization, and management of ADP resources was placed in question.

In 1973, Executive Order 11717 relieved OMB of its policy control functions for ADP resources and shifted them to GSA. However, OMB was not relieved of its policy oversight and formulation responsibilities. In 1975, Executive Order 11893 transferred certain policy functions back to OMB from GSA. The problem remained that neither executive order clarified the extent of GSA's role in "developing" policy in relation to OMB's "formulation". [Ref. 8:II-18]

Also in 1975, pursuant to PL 93-400, OFPP was established within OMB to "provide overall direction of procurement policies, regulations, procedures, and forms". (PL 93-400) As noted above, this created questions as to OFPP's role in relation to GSA concerning ADP acquisition policy. OFPP conceded the unique nature of ADP acquisition and did not challenge GSA's ADP acquisition policy responsibilities. Rather, as tasked by PL 96-83 and Executive Order 12352, OFPP directed its efforts toward development of the Federal Acquisition Regulations (FAR) based upon OFPP's proposal for a uniform procurement system.

3. GSA

Under the Brooks Act, sole procurement authority for ADP resources was assigned to GSA. Within GSA, procurement oversight for ADP resources resides in the Office of Information Resources Management (OIRM), formerly the Automated Data and Telecommunications Service (ADTS).

GSA has been criticized for its inability to cope with ADP procurement and policy responsibilities. ADTS relationships with customer agencies seeking to obtain authorization to proceed with or conduct ADP procurements, a Delegation of Procurement Authority, were a constant source of conflict. Additionally, as previously noted, the delineation of authority and responsibility between OMB and GSA has been vague and has contributed to the problems.

Recently, in compliance with the Paperwork Reduction Act of 1980 (PL 96-511), GSA has made efforts to improve its functioning. Primarily, GSA assumed the role of an operational manager subject to OMB's direction and reorganized and established the OIRM in place of the ATDS. Purchasing authority for ADP acquisitions of less than $500,000 has been delegated to customer agencies and purchasing authority for greater amounts may be approved by OIRM for certain agencies (the Navy has obtained blanket approval authority).

4. ASD(C)

The Assistant Secretary of Defense (Comptroller) is assigned responsibility for the Department of Defense ADP Program. ASD(C) integrates and implements Federal ADP policy through the promulgation of policy and directives applicable to OSD, JCS, military departments, the defense agencies, and unified and specified commands. He oversees the implementation of ADP policies and plans within DOD and monitors major ADP system acquisitions. While he exerts

minimal influence over military departments' acquisitions, ASD(C) does function as the central DOD point of contact and provides liaison between DOD and GSA, OMB, or Congressional committees.

Additionally, the Deputy Under Secretary of Defense for Research and Engineering (USD(R and E)) and the Assistant Secretary of Defense for Command, Control and Communication (ASD(C3)), influence the DOD acquisition process. USD(R and E) has been designated the DOD Acquisition Executive and is assigned responsibility for integration and implementation of Federal acquisition policy in general. ASD(C3) oversees the promulgation and implementation of those acquisition policies applicable to the use of or interface with telecommunications. The result of this functional division of acquisition policy responsibility is that a sufficiently complex ADP system development project may encounter multiple, and sometimes conflicting, interpretations or implementations of acquisition policy.

5. SECNAV

The Secretary of the Navy is responsible for and has authority to conduct all affairs of the Department of the Navy (DON). He exercises his authority and control for ADP acquisition matters through the Deputy Under Secretary of the Navy for Financial Management (DUSN(FM)).

The DUSN(FM) acts as the Senior ADP Policy Official (SPO) for the Navy in compliance with the requirements of PL 96-511. The SPO's ADP responsibilities include selection, acquisition, management and use of ADP resources.

6. CNO

The Chief of Naval Operations (CNO) is responsible for implementing and administering DON ADP acquisition policy and procedures. Based upon results of recent studies

of Navy non-tactical ADP management, the CNO has instituted a reorganization effort and established OP-945 as the information systems focal point within DON at the CNO level. OP-945 has changed the emphasis from policy compliance monitoring to establishing and maintaining an architecture (comprehensive description) of Navy information systems, technology assessment and leadership, information systems planning, and sponsoring/coordinating information system initiatives among functional areas.

7. NAVMAT

The Naval Material Command (NAVMAT) is the DON functional manager for implementation of acquisition policy and procedures. NAVMAT exercises operational control over the major Systems Commands and procurement activities, such as the Automated Data Processing Selection Office (ADPSO), in the actual procurement of material and services for the Navy.

8. NAVDAC

The Naval Data Automation Command (NAVDAC) was established in 1977 for the purpose of administering and coordinating the Navy's non-tactical ADP program. Its primary functions are to provide effective and efficient ADP support to Naval commands and to optimize the use of current ADP techniques. NAVDAC's responsibilities include development of ADP policy and procedures, approval of ADP systems development and acquisition, and collaboration on ADP matters with all ADP claimants.

III. ADP ACQUISITION PROCESS

A. BACKGROUND

The typical ADP acquisition does not exist. Navy activities differ in needs and where one organization may require pure processing power, another may require enhanced telecommunications capability, and another the full spectrum of capabilities (e.g. mainframe, microcomputers, related software purchase and conversion, etc). The common bond amongst the potential acquisitions is the requirement for the requesting activity to persevere through two distinct processes. Initially all potential acquisitions must be prepared and submitted with justification via the chain of command to obtain "ADP approval", from the Senior Policy Official (or his designated representative). Special interest acquisitions may require GSA approval. Additionally, a determination is made regarding the need for obtaining Delegation of Procurement Authority (DPA) from GSA. Once these are accomplished, the requesting activity then enters the "Acquisition (contracting) process". For simplification purposes, the remainder of this chapter will emphasize the approval and acquisition processes of life cycle managed AIS only. This action should facilitate future comparison with private sector companies as discussed in the Introduction.

B. ADP APPROVAL PROCESS FOR AIS

Life Cycle Management (LCM) is a management tool developed to assist both project managers and approval authorities. It is the process utilized to administer an AIS from perception of need to deployment and operation. Inherent in

this process is a methodology for ensuring appropriate decisions regarding the design, development, conversion, implementation, modification, and operation of automated information systems. Key instructions which govern the Navy's AIS approval process are:

- SECNAVINST 5231.1A, Life Cycle Management of Automated Information Systems within the Department of the Navy - Implements LCM of AIS by establishing policies in accordance with DOD Directives and Instructions and assigning responsibilities for LCM within the Navy.
- SECNAVINST 5230.6B, Automatic Data Processing Approval Authority and Acquisition/Development Threshold; delegation of established approval thresholds, approval authorities, and assigned responsibilities for acquisition/development of ADP systems. See figure 3.1
- NAVDAC Advisory Bulletin No. 46, 9 March 1983, Revised LCM Requirements - Provides for the division of LCM documentation into three categories: (1) system decision documentation, (2) project management documentation and (3) system documentation as promulgated by NAVDAC Publications 24.1 and 24.2. Figures 3.2 and 3.3 represent the detailed components of the life cycle process.

The life cycle of an AIS has five major phases which culminate in major decision milestones. These phases are: Mission Analysis/Project Initiation (Milestone 0), Concept Development (Milestone I), Definition/ Design (Milestone II), System Development (Milestone III), and Deployment/Operation (periodic Milestone IV reviews). In the interest of reducing paperwork processing to a minimum, system decision and project management documentation have been separated. Instead of forwarding the entire Project Management Plan (PMP) for the review of the decision makers, a synopsis of specific elements of the PMP is now used to obtain milestone decisions.

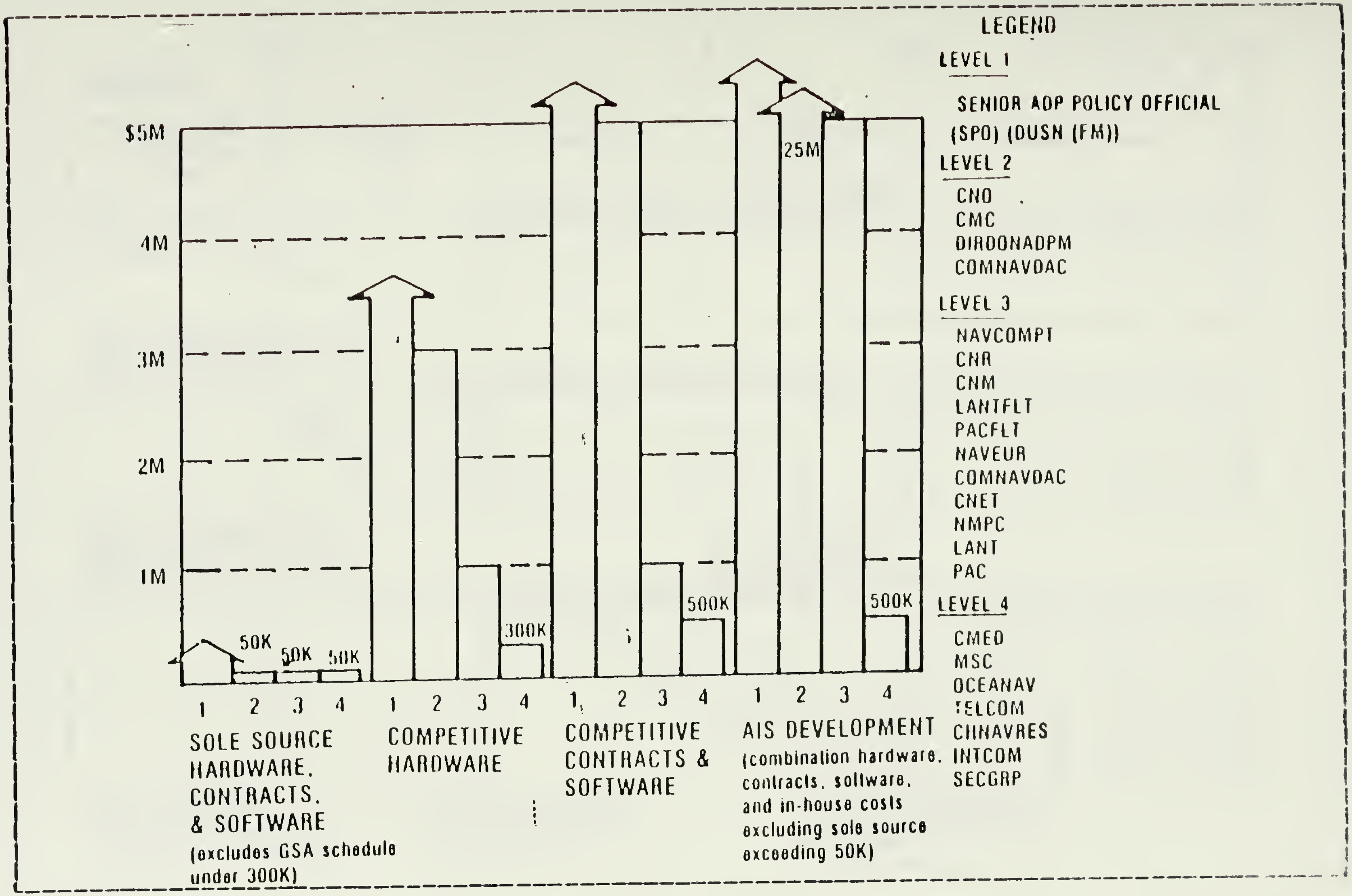


Figure 3.1 ADP Approval Authorities and Thresholds.

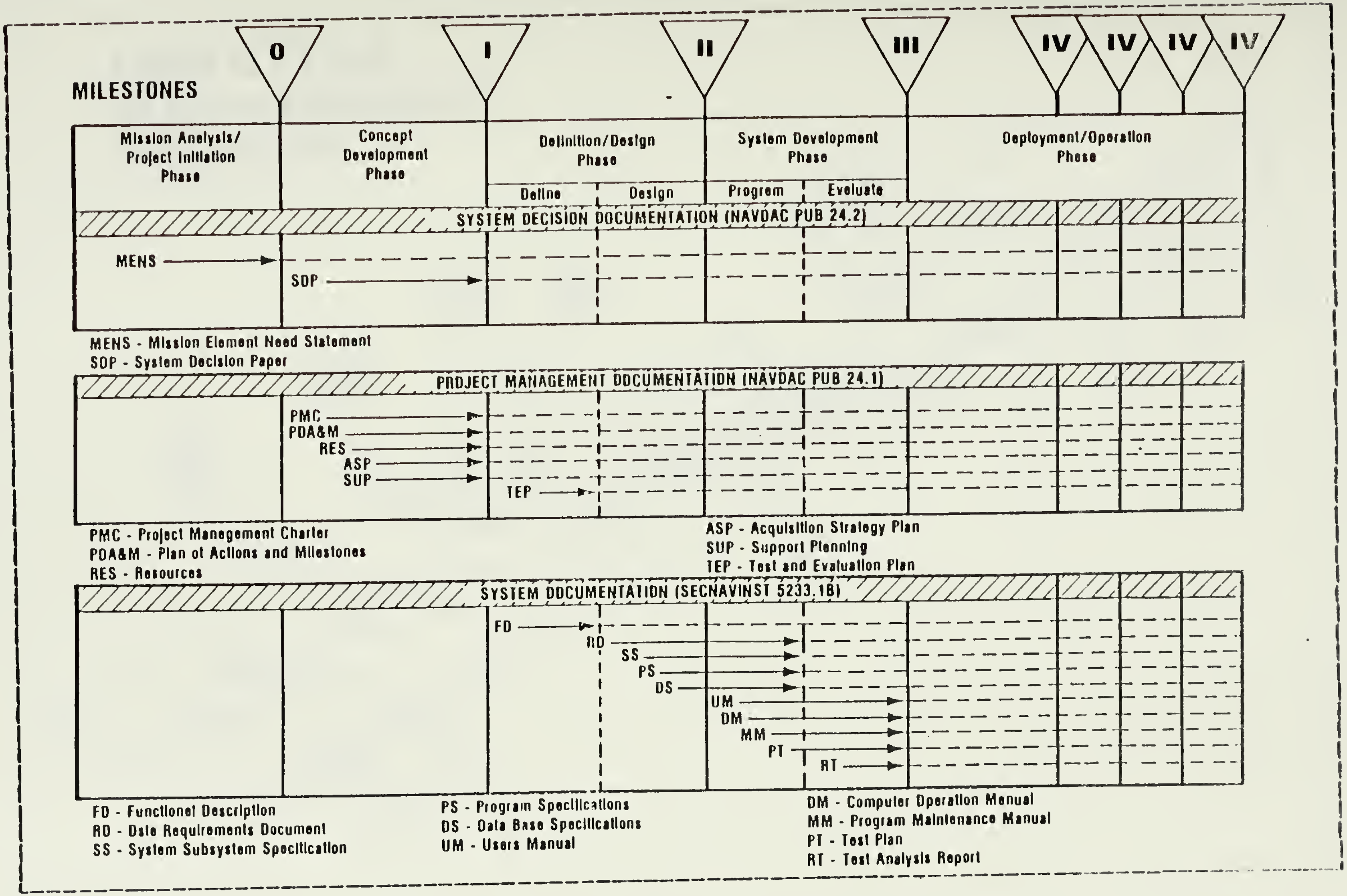

MILESTONES
0
I
II
III
IV
IV
IV
IV
Mission Analysis/ Project Initiation Phase
Concept Development Phase
Definition/Design Phase
Define
Design
System Development Phase
Program
Evaluate
Deployment/Operation Phase
SYSTEM DECISION DOCUMENTATION (NAVDAC PUB 24.2)
MENS
SOP
MENS - Mission Element Need Statement
SOP - System Decision Paper
PROJECT MANAGEMENT DOCUMENTATION (NAVDAC PUB 24.1)
PMC
PDA&M
RES
ASP
SUP
TEP
PMC - Project Management Charter
PDA&M - Plan of Actions and Milestones
RES - Resources
ASP - Acquisition Strategy Plan
SUP - Support Planning
TEP - Test and Evaluation Plan
SYSTEM DOCUMENTATION (SECNAVINST 5233.1B)
FD
RD
SS
PS
DS
UM
DM
MM
PT
RT
FD - Functional Description
RD - Data Requirements Document
SS - System Subsystem Specification
PS - Program Specifications
DS - Data Base Specifications
UM - Users Manual
DM - Computer Operation Manual
MM - Program Maintenance Manual
PT - Test Plan
RT - Test Analysis Report

Figure 3.2 Life Cycle Management Documentation.

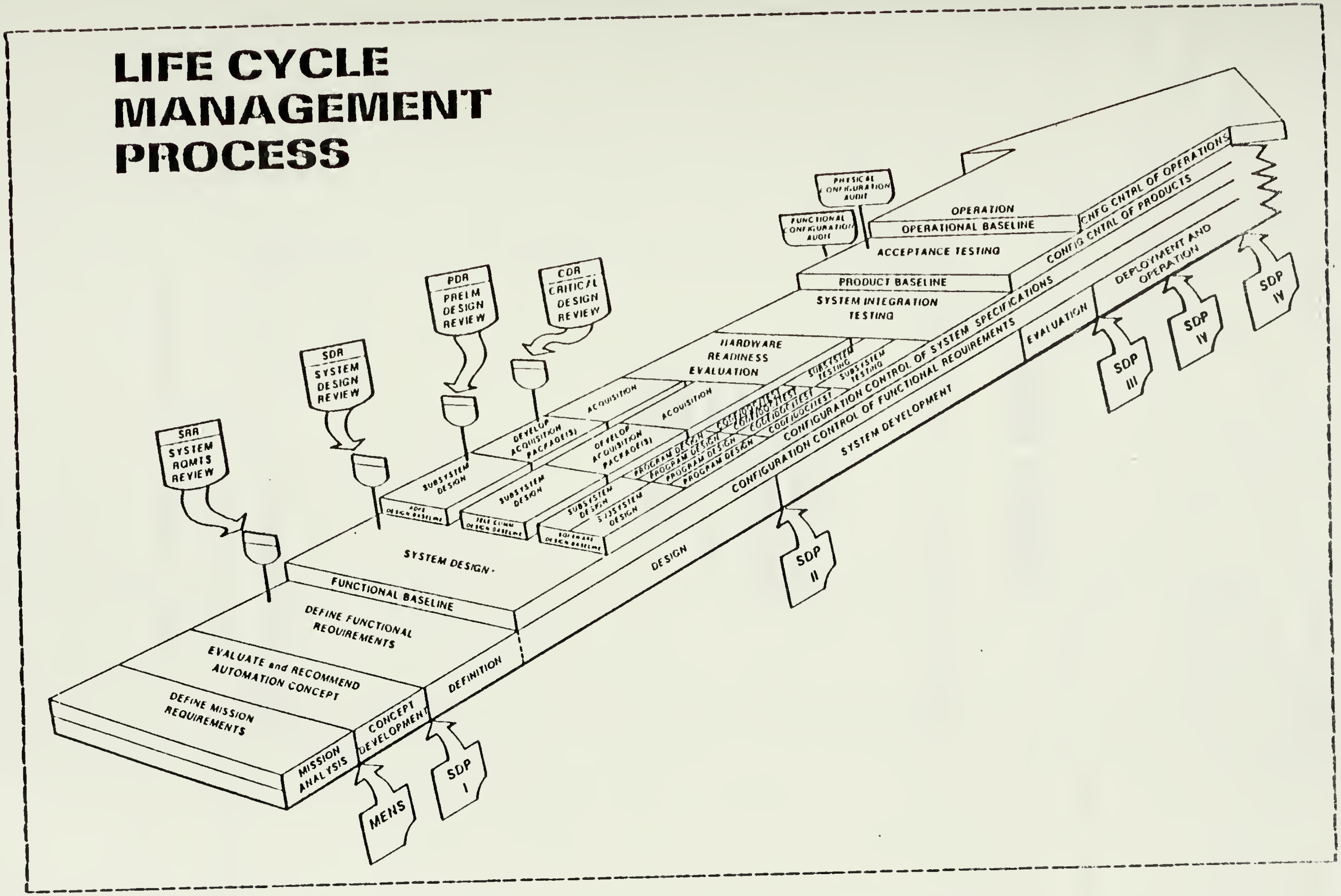
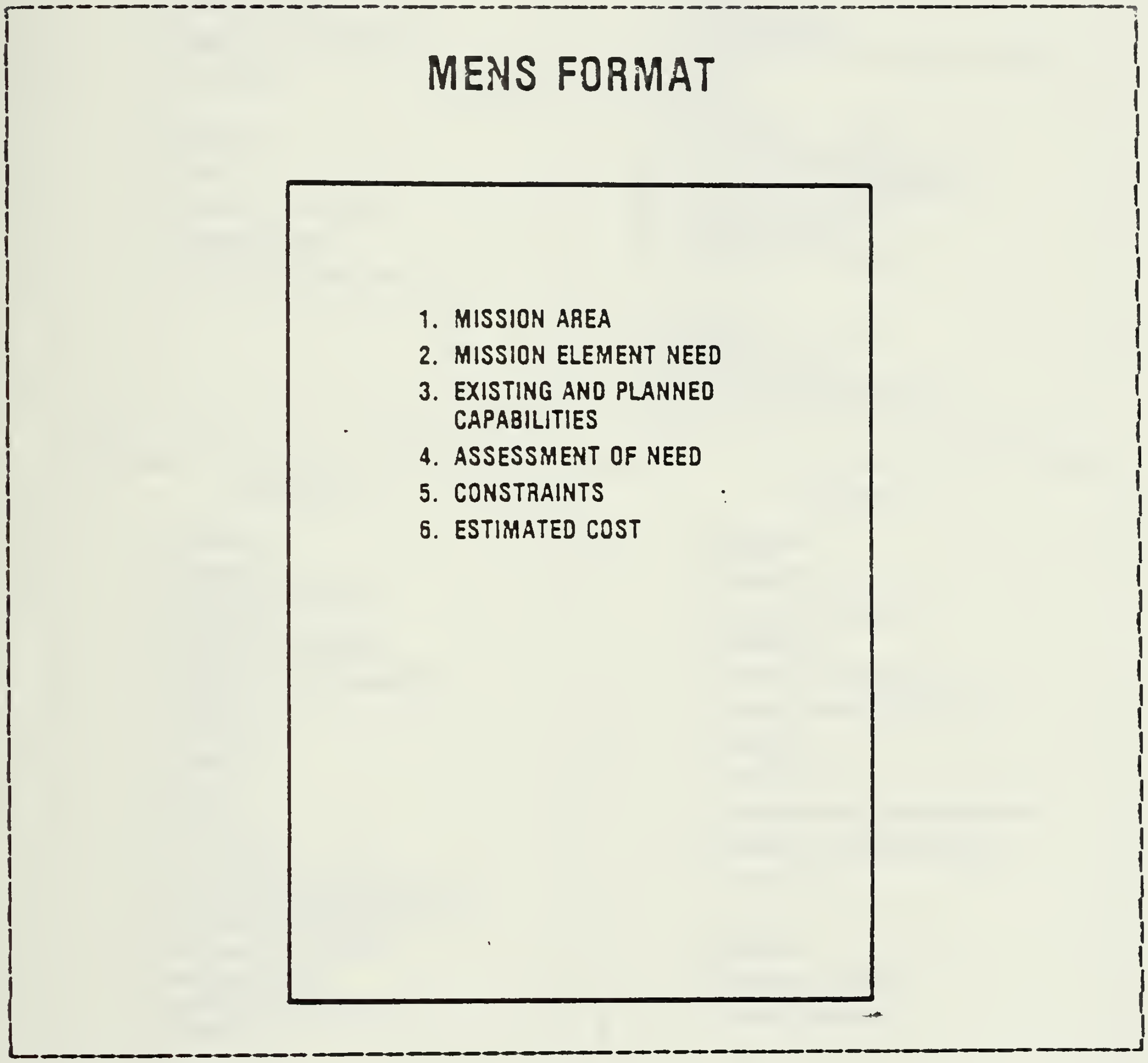


Figure 3.3 Life Cycle Management Process.

"The Mission Element Need Statement (MENS) is the decision document for Milestone 0 and the System Decision Papers (SDP's) I, II, III, and IV are the decision documents for Milestones I, II, III, and IV." [Ref. 10] The formats in figures 3.4 and 3.5 depict what documentation is to be submitted at each milestone.



MENS FORMAT

1. MISSION AREA
2. MISSION ELEMENT NEED
3. EXISTING AND PLANNED CAPABILITIES
4. ASSESSMENT OF NEED
5. CONSTRAINTS
6. ESTIMATED COST

Figure 3.4 MENS Format.

MILESTONE I

1. OVERVIEW
2. ALTERNATIVES
3. SCHEDULES OF EVENTS
4. RESOURCES
5. ACQUISITION STRATEGY
6. DATA COMMUNICATIONS
7. PROBLEM AREAS
8. CONFLICTING VIEWPOINTS
9. APPROVALS

APPENDICES

A. GFR
B. ECONOMIC ANALYSIS
C. BUDGET EXHIBITS
D. DATA COMMUNICATIONS PLAN

MILESTONE II

1. OVERVIEW
2. REQUIREMENTS
3. ALTERNATIVES
4. SCHEDULE OF EVENTS
5. RESOURCES
6. ACQUISITION STRATEGY
7. CONFIGURATION MANAGEMENT
8. LOGISTICS
9. TRAINING
10. STANDARDIZATION
11. INTEROPERABILITY
12. TRANSITION AND ALTERNATIVE STRATEGY
13. SECURITY
14. PRIVACY
15. SOFTWARE
16. DATA COMMUNICATIONS
17. ADP EQUIPMENT CONFIGURATION
18. SUPPORTING DOCUMENTATION
19. TEST AND EVALUATION
20. PROBLEM AREAS
21. CONFLICTING VIEWPOINTS
22. APPROVALS

APPENDICES

A. ECONOMIC ANALYSIS
B. BUDGET EXHIBITS
C. DATA COMMUNICATIONS PLAN

MILESTONE III

1. OVERVIEW
2. ALTERNATIVES
3. SCHEDULE OF EVENTS
4. RESOURCES
5. ACQUISITION STRATEGY
6. CONFIGURATION MANAGEMENT
7. LOGISTICS
8. TRAINING
9. TRANSITION
10. SECURITY
11. PRIVACY
12. SOFTWARE
13. DATA COMMUNICATIONS
14. ADP EQUIPMENT CONFIGURATION
15. SUPPORTING DOCUMENTATION
16. TEST AND EVALUATION
17. PROBLEM AREAS
18. CONFLICTING VIEWPOINTS
19. APPROVALS

APPENDICES

A. ECONOMIC ANALYSIS
B. BUDGET EXHIBITS

MILESTONE IV

1. OVERVIEW
2. EVALUATION
3. SCHEDULE OF EVENTS
4. RESOURCES
5. ACQUISITION STRATEGY
6. CONFIGURATION MANAGEMENT
7. LOGISTICS
8. TRAINING
9. ADP EQUIPMENT CONFIGURATION
10. SUPPORTING DOCUMENTATION
11. APPROVALS

APPENDICES

A. ECONOMIC ANALYSIS
B. BUDGET EXHIBITS

Figure 3.5 System Decision Paper Formats.

This action is not intended to deflate the value of project management documentation, and project managers are reminded in instructions that the PMP can be requested at any time by higher level authorities. Progression from one phase to the next requires the positive concurrence of the functional sponsor, the ADP approval authority, and the data communications authority. In addition, large dollar acquisitions will require the endorsements of NAVDAC and CNO. Key players and their life cycle functions are:

- Functional Manager - Represents the customer organization requesting the AIS and is responsible for:
  - i) Ensuring preparation of the MENS.
  - ii) Establishing functional requirements and determining their priorities.
  - iii) Participating in system acceptance tests and test planning.
  - iv) Formally certifying the functional adequacy of an AIS.
  - v) Appointing a project manager for each AIS and approving a charter stating the responsiblity, authority, and accountability of that project manager in the management of an AIS.
  - vi) Appointing an ADP manager and a data communication manager for each AIS when required.
- Project Manager - Appointed by the functional manager to coordinate all management aspects of an AIS through its deployment phase. He is responsible for:
  - i) Performing functional systems design and planning.
  - ii) Ensuring conformance with functional requirements in the design, development, documentation and testing of the AIS.
  - iii) Coordinating functional, technical, and data communications activities.

iv) Conducting milestone briefings and preparing the SDP's when required.

v) Preparing the Functional Description, User's Manual and Continuity of Operations Plan (if required).

vi) Ensuring configuration control is maintained for the AIS.

- Functional Sponsor -

i) Obtaining funding certifications.

ii) Reviewing each AIS at each milestone and providing concurrence or disapproval.

iii) Validating the requirements of the functional, ADP, and data communications plans.

iv) Establishing priorities within the spectrum of requirements.

v) Ensuring compliance with DODINST 7920.1 and other instructions.

- Approval Authority - Identified by the project manager based on the overall development cost or special interest classification of a given AIS. He is responsible for:

i) Establishing an ADP Executive Committee for review of AIS actions within his purview.

ii) Assessing the status of each AIS and providing for the approval action at each major milestone.

iii) Ensuring compliance with current policies and initiating corrective action as required (e.g. new planning costs exceed the previous planning cost estimates by 15 percent or more at a decision point).

- Data Communications Manager - Appointed by the functional manager and is responsible for:

i) Designing, testing, and implementing the data communication documentation.

  - ii) Developing a data communications plan and supporting documentation.
  - iii) Participating in scheduled reviews.

- ADP Manager - Appointed by the functional manager, after consultation with the ADP approval authority, and is responsible for:
  - i) Developing a technical design.
  - ii) Developing all required software either internally or externally.
  - iii) Assisting with ADP functional systems design and planning.
  - iv) Participating in scheduled reviews.
  - v) Maintaining configuration control of documentation, both software and hardware.
  - vi) Preparing technical system documentation which includes: (1) System/Subsystem Specifications (SS), (2) Data Base Specifications (DS), (3) Program Specifications (PS), (4) Computer Operation Manual (OM), (5) Program Maintenance Manual (MM), and (6) Test Plan (PT).

NAVDAC Advisory Bulletin No. 46 promulgated LCM documentation and procedural guidelines. It did not mandate that all acquisitions be performed in the same manner, but it did advocate that certain elements must be included in the acquisition of all systems. Appendix A illustrates the flow of system design documentation in a traditional approach to systems development approvals [Ref. 10:i].

C. ACQUISITION PROCESS FOR MAJOR AIS

> "The Navy gives equal oppurtunity and consideration to all offerors through solicitation of proposals from industry. Solicitation, evaluation and selection are objectively based on data system specifications. The prime factors considered in selection are the capability to fulfill data systems specifications and the lowest

system life cost, price and other factors considered." [Ref. 11:15]

Within the Navy, the Deputy Undersecretary of the Navy is the Senior Policy Official (SPO) for ADP. In his role of SPO he is officially designated the Source Selection Authority for acquisitions exceeding $3 million. The Automated Data Processing Selection Office (ADPSO) is tasked as the central selection office for ADP projects under the SPO's purview. Key instructions which govern the ADPSO acquisition process are:

- ADPSONOTE 4235 of 15 June 1981, Contracting for ADPE - Establishes the requirements for requisition preparation and submission for acquiring ADP equipment and services.
- ADPSONOTE 5236 of 30 March 1981 - Promulgates guidance regarding the conduct of the ADP evaluation and selection process to members of the Source Selection Evaluation Board and Source Selection Advisory Council.

The sequence of events, responsible activities, and pertinent references for the solicitation process are outlined in chronological sequence in Figure 3.6. Key players and functions identified in the selection process are:

- Source Selection Evaluation Board (SSEB) - Members of the SSEB are derived from the requesting activity, ADPSO and the sponsoring activities when deemed appropriate. The SSEB is typically chaired by a ADPSO technical representative. Responsibilities of the SSEB include: (1) preparation of the selection plan and solicitation document, (2) validation of proposals to include operational capability and benchmark demonstrations, (3) liaison with vendor representatives and (4) submission of analysis report to the SSAC Chairman.

STEP	EVENT/ACTION	RESPONSIBLE ACTIVITY	REFERENCE
1	Prepare ADP specifications and benchmark tests	User	12,13 15,16
2	Check reutilization and sharing	User	17
3	ADP Approval	SPO	18
4	Delegation of Procurement Authority	GSA	12,19 20
5	SSEB Appointment	ADPSO	12
6	SSAC Appointment	SPO	12
7	Verify specifications, determine equipment criteria	SSEB	12
8	CBD announcement for LOI	SSEB	19
9	LOI issued to industry	SSEB	19
10	Responses to LOI	Vendor/GSA	19
11	Develop solicitation document and amendments	SSEB	19,21 16
12	Develop evaluation/selection plan. Issue solicitation document.		
13	Pre-proposal vendor conference (optional)	SSEB/Vendor	13,16 19,22
14	CBD announcement (or solicitation)	SSEB	19
15	SSAC review	SSAC	
16	GSA eight day review	GSA	19
17	Issue solicitation document	SSEB	12,19
18	Issue benchmark	SSEB	12,19
19	Prepare proposals	Vendors	19
20	Validate proposals	SSEB	22
21	Evaluate proposals	SSEB	22
22	Conduct benchmark	SSEB/Vendor	13,15 19,22
23	Prepare technical report	SSEB	22
24	Prepare pre-business clearance approval	NAVMAT	21
25	Negotiations	SSEB	19,21
26	Best and finals	Vendors	19,21
27	EEO clearance	OFCCP	
28	SSEB report to SSAC	SSEB	22
29	SSAC approval/recommendations	SSAC	16
30	Prepare post-business clearance	SSEB	21
31	Post-business clearance approval	NAVMAT	21
32	SPO approval of selection	SPO	12,22
33	Reutilization statement of non-availability	SSEB	17
34	Contract award	Contracting Officer	14,21
35	Debrief competitors	SSEB	12,22
36	Readiness review	User/ Sponsor	23
37	Initial installation	Vendor	12
38	Acceptance testing	User	12,21
39	Contract monitoring	Multiple	21,24

*Reference numbers pertain to List of References.

Figure 3.6 Steps in the ADP Selection Process.

- Source Selection Advisory Council (SSAC) - Members of the SSAC are derived from ADPSO management officials, the requesting activity, sponsor organizations and NAVDAC or CMC representatives. Responsibilties of the SSAC include: (1) review and approval of the selection plan and solicitation document proposed by the SSEB, (2) resolve issues brought up by the SSEB, and (3) approve the SSEB report and recommend source selection to the SSA (SPO).

D. OBSERVED PROCESS ENHANCEMENTS

The ADP acquisition process as discussed previously is not well known or understood by most people in the Navy. The built-in layered approval authority and review processes have hindered past agency attempts to take advantage of advances in computer technology resulting in:

- Installations utilizing obsolete computing equipment which in some cases was produced in the late 1960's and is now two generations old.
- Increased costs to operate and maintain this obsolete equipment as compared to an equal capacity current generation system.
- Difficulty in finding and keeping personnel to work with obsolete equipment.
- Inability to develop newer applications due to the technological limitations of the obsolete equipment (e.g. lack of sufficient main memory to allow more users or real time processing).

The significant improvements in price/performance ratios are highly prized items which agencies are demanding in growing numbers. This present trend will continue as computers decline in price, as users realize the benefits of the computer's capabilities, and as ceilings on manpower levels

continue to exist. Therefore, the current impetus for the Navy's Computer Acquisition Program is to eliminate the disproportionate concern over "process accountability".

Accordingly, DOD and the Navy's data automation leadership have taken numerous initiatives in the past year to reduce the administrative burden of incorporating new information processing technologies. Efforts taken outside the existing regulatory guidance to reduce manpower, time, and overhead costs were:

1. Blanket DPA Authorized by GSA for $10 million or less

In their quest for GSA assistance, various Navy activities and vendors have criticized GSA for its development of unresponsive and unaccountable procedures. One of the Navy's most frequently mentioned problems is the delay and/or non-approval of requests for delegation of procurement authority (DPA). While DPA's have been delegated for ADP acquisitions of $2.5 million or less, GSA has oftentimes been reluctant or delayed action on requests of higher dollar value. GSA claims that the average request is now processed in 14 to 16 working days; however, the Navy has contested these figures and petitioned for relief.

Effective October 1983, the Navy has been granted blanket DPA for all ADP acquisitons of $10 million or less. This blanket approval was based upon the Navy's past technical competence, compliance with GSA procurement guidelines and criteria, and compliance with Government ADP objectives. In return, the Navy is now required to provide GSA a yearly plan of expected purchases and, as before, is subject to audits as deemed appropriate.

Navy officials expect to save a minimum of thirty (30) days processing time. More importantly, this action should minimize the inherent communication problems of dealing with an organization external to the Navy.

2. Selected ADPE exclusion from the Brook's Act

The Brook's Act, P.L. 89-306, requires GSA approval for automatic data processing (ADP) related acquisitions. The Warner Amendment, P.L. 97-86 (10 USC 2315), excludes acquisitions of certain ADP equipment and services from the Brook's Act as follows:

> §2315. Law inapplicable to the procurement of automatic data processing equipment and services for certain defense purposes
>
> (a) Section 111 of the Federal Property and Administrative Services Act of 1919 (10 U.S.C. 795) is not applicable to the procurement by the Department of Defense of automatic data processing equipment or services if the function, operation, or use of the equipment or services --
> (1) involves intelligent activities;
> (2) involves cryptologic activities related to national security;
> (3) involves the command and control of military forces;
> (4) involves equipment that is an integral part of a weapon or weapons system; or
> (5) subject to subsection (b), is critical to the direct fulfillment of military and intelligence missions.
>
> (b) Subsection (a)(5) does not include procurement of automatic data processing equipment or services to be used for routine administrative and business applications (including payroll, finance, logistics and personnel management applications).

The portion of the Warner Amendment which speaks to support systems "critical to the direct fulfillment of military and intelligence missions", but not including certain business applications raised many questions. The USD (R and E) issued a memorandum on 4 March 1983 providing clarification on this matter based upon the Senate Armed Services Committee Report on the DOD FY83 Authorization Act and other comments of service components. In addition, DUSN (FM) issued a memorandum on 21 April 1983 endorsing the revised DOD Guidelines on exempt hardware, software, and services. Current guidance is provided in Appendix B.

Liaison with NAVDAC analysts indicate that extensive use of these provisions in conjunction with blanket DPA's as outlined above should provide the Navy with the necessary tools to implement ADP projects more efficiently thereby reducing the administrative overhead for approximately 90 percent of future acquisitions.

3. ASD(C) Delegation of Approval Authority for Major AIS

ASD(C) memorandum dated 5 September 1979 implemented DOD Directive 7920.1, "Life Cycle Management of Automated Information Systems (AIS)." This implementation provided a delegated review of twelve (12) of the thirteen (13) major automated information systems of the Navy to the DUSN(FM). Table II provides an extrapolation of major Navy specific AIS affected. Thus, for these twelve systems, only information copies of milestone schedules and documentation of decisions at major milestones are required.

This action is considered significant as the following example illustrates for the Naval Supply System Commands Stock Point ADP Replacement Project.

Milestone: SDP I

Date	Action
15 April 1983	NAVSUP request approval of SDP I from functional sponsor (NAVMAT)
16 June 1983	NAVMAT recommends approval to NAVDAC
4 August 1983	NAVDAC performs review of SDP I package for CNO(OP-945) and provides additional information requested by CNO staff
9 August 1983	CNO(OP-945) reviews package and recommends approval of SDP I to DUSN(FM)
22 November 1983	Final approval of SDP I granted by DUSN(FM)

TABLE II

Major AIS Approval Responsibility

Major AIS	DOD	Navy
Manpower and Personnel Management Information System (MAPMIS)	X	
Shipboard MIS (include SNAP I and II)		X
MIS for Stockpoints		X
MIS for Inventory Control Points		X
Manpower Information System for Education and Training		X
Laboratory Support System		X
Naval Aviation Logistics Command MIS		X
MIS for Operating Air Stations		X
MIS for CNO Stations		X
NAVSEA Support Systems		X
Air Logistic Support System		X
Integrated Automated Intelligence Processing System		X
Marine Corps ADPE Replacement		X

While this seven (7) month process might have appeared excessive, the project office continued working towards SDP II during the interim based upon informal liaison. The addition of a OSD layer would only serve to compound the communication channels, jeopardizing approval, and further delaying an already cumbersome process.

4. Assigned ADP Procurement Responsibilities to CHNAVMAT

In July 1983, ADPSO was moved under the Chief of Naval Material umbrella instead of NAVDAC. This action more clearly assigns procurement responsibilities and reduces the number of review/approval levels, thereby simplifying the procurement process and reducing acquisition time. Additional benefits to be realized are increased availability of procurement and contract experts for the increasingly complex ADP acquisition environment. Lastly, this action is a positive step forward to developing a viable career path for ADPSO personnel.

E. RECENT PROCESS IMPEDIMENTS

Increased management recognition of the value of their computer systems as a resource has helped DOD/Navy make inroads in reducing costs and increasing the effectiveness of its computer support as delineated above. However, the past practice of utilizing operating funds (e.g. O and M, N) for straight leasing or leasing to ownership for expedient replacement of obsolete ADP equipment is having serious repercussions. Recent GAO investigations have cited numerous examples of excessive rents paid and known savings oppurtunities which were bypassed because procurement funds were not available.

GAO analyzed over 225 computer leases and found ". . . . in 93 percent of the cases, that outright purchase, refinancing the existing lease through a third party, or acquiring a used substitute in the open market would be less expensive than continuiing the equipments present lease." [Ref. 25:3] Accordingly, the joint conference report on the FY84 Defense Appropriations Bill criticizes the management of automated data processing equipment acquistion and directs the following:

- Reduce operation and maintenance by $150 million and increase the Defense Industrial Fund $150 million for buyout of existing leases.
- All future ADP equipment will be purchased outright unless other lower total overall cost option exists.
- Acquisition of ADP equipment will be achieved at the lowest cost to the government through competition. However, this rule can be dropped when "warranted by a national exigency to support a time sensitive program of the highest national priority." It is important to note that this direction states that ". . . . acquisition is not to be considered competitive solely on the basis of inclusion on the GSA ADP schedule." [Ref. 26] This statement recognizes the documented savings (approximately 25 percent) which can be achieved, from GSA ADP schedules, through formal competition. [Ref. 3:60]
- A complete audit of all ADP equipment in DOD will be conducted to ensure the government is not paying rent on equipment it owns. This will enable DOD to create an inventory baseline and determine where ADP deficiencies exist, and transfer equipment as required.
- Institute a training and advisory program to ensure that DOD contracting officials have sufficient ADP expertise to protect the government's interest and understand agency equipment requirements.
- Purchase existing ADP equipment used by DOD but not owned. A report to Congress is due by April 1, 1984 detailing plans for carrying out this instruction.
- Senior Information Resource Manager's or their designees are authorized to approve case-by-case exceptions to the requirements for competitive bids and outright purchase. NOTE: Exceptions cannot be justified solely on the basis of time sensitivity or lack of necessary funds.

Congressional direction was provided in response to convincing testimony of GAO but does not address the following:

- The prime inhibitor to any acquisition process is the cost and availability of funds. The Planning, Programming and Budgeting System (PPBS) is the DOD tool for allocating scarce defense resources. Since PPBS involves an iterative process to move from broad program considerations, to program objectives, and to specific budget estimates the short run flexibility of the PPBS is severly limited. The systematic approval procedures "cost out" force objectives five years into the future through submission of service Program Objectives Memorandum (POM). In July of this year the services will:
  - i) Execute their FY84 budget, and
  - ii) Justify to Congress their September 1983 budget submission for FY85, and
  - iii) Prepare their FY86 budget for submission in September 1984. Outyear forecasts for FY87-90 are included.
- FY84 Defense Appropriations Bill dollar for dollar replacement of procurement funds for operating funds is inadequate. It is estimated that three to five times the lease money is needed to achieve outright purchase as directed above.
- Activities which own computer systems outright have a built in bias to postpone high cost replacement decisions while continuing to pay operation and maintenance costs only. Lease utilization offered the oppurtunity to upgrade technologically to achieve price/performance improvements within currently available funding.
- Pending acquisitions (i.e. ICP Resolicitation Project) have been project managed in accordance with existing

guidelines for many years. In some instances the acquisition strategy provided great flexibility through use of technological refreshment reviews of leased equipment to avoid future obsolescence. Is Congress now saying that, despite agency best efforts to overcome past obsolescence concerns, agencies must now accept a less than satisfactory alternative?

- Resurgence of frustration on DOD and ADP professionals who had recently witnessed a reduction in oversight functions.

The joint conferee's management direction appears to present another set of bureaucratic hurdles that is sure to generate short run confusion at best.

F. CHAPTER SUMMARY

This chapter examined the approval and acquisition phases of the Navy ADP acquisition process as related to major AIS. A review of current DOD and Navy directives, their requirements and pitfalls, and the key players involved provided a look at this complex process.

Inherent in the Navy philosophy of ADP acquisition is the proper evaluation of alternative computer systems with regard to:

- Advancements in technology.
- Systems life cycle planning.
- Sound management principles.
- Applications/Equipment needed versus available.
- Lowest total overall cost.
- Financial constraints.

The ability to identify the cost drivers in this evaluation process is addressed in Chapter IV through case study analysis and model development.

IV. ADP ACQUISITION CASE ANALYSIS AND MODEL DEVELOPMENT

A. BACKGROUND

One of the issues addressed by the President's Private Sector Survey on Cost Control (the Grace Commission) task force report on the Department of the Navy concerned the "excessive time being spent on planning, designing, developing, and installing computer systems for routine business operations." [Ref. 2:4] The report estimated that the average time interval for bringing new systems on line could be reduced from ten years to three years with estimated savings of approximately $5 billion over the next ten years or $500 million annual average savings. [Ref. 2:126]

Most of the major Navy computer systems were installed in the mid 1960's and early 1970's. The technology and the operating systems they represent are obsolete, the equipment is difficult and expensive to maintain, and frequent "down-time" results in a loss of user productivity. The Navy has recognized the problems resulting from its "old" systems and has instituted numerous projects directed toward replacement of large amounts of the obsolete equipment. Major Navy ADP projects specifically identified by the Grace Commission to accomplish this end are:

- The Shipboard Non-Tactical ADP Project (SNAP I and II). Started in the late 1970's, it is scheduled for completion in 1988.
- The Naval Aviation Logistics Command Management Information System (NALCOMIS) project. Started in 1970, it is scheduled for completion in 1990.
- The Inventory Control Point (ICP) Resolicitation Project. Started in 1977 it is scheduled to complete in 1989.

- Integrated Automated Intelligence Processing System (IAIPS) project. Begun in 1977, it is scheduled for completion in 1984.
- The Integrated Disbursing and Accounting Financial Management System (IDAFMS) project. Started in 1976, it is targeted for completion in 1988.
- The Source Data System (SDS) project for the Naval Military Personnel Command. Started in 1977, it is scheduled to complete in 1987.
- The Personnel Payroll (PERSPAY) project. Started in 1978, it is scheduled for completion in 1985.
- The Standard Shipyard MIS Project. Started in 1976, it is scheduled for completion in 1986.

All of the above projects were cited by the Grace Commission as "highly desirable and urgently needed." However, the average completion period for these projects is 11.5 years. Other major AIS projects have since been established that have equal importance and offer a look at the application of current life cycle management guidance.

After a review of the major Navy ADP projects, three were selected for case study analysis. The projects selected were: the Stock Point ADP Replacement Project, the ICP Resolicitation Project, and the Shipboard Non-Tactical ADP Project I (SNAP I). These projects were selected based upon consideration of the following factors:

- The three projects represent a significant portion of current efforts to upgrade the Navy's logistic functions.
- The potential existed for commonality of project cost, data collection, and reporting based on the projects relation to a single functional user.
- Initial liaison with Headquarters' project personnel indicated an availability of cost data and a willingness to discuss the projects.

- The SNAP I project had completed the approval and procurement phases and the Resolicitation project was near completion.
- The Stock Point ADP Replacement Project is one of the first to be managed from inception under current life cycle management directives.

Despite extensive efforts to identify and collect relevant project cost data, much of the desired data proved to be unavailable. Due to the matrix organization structure within which project offices are established and the tasking of multiple field organizations for project support, aggregate cost data by detailed categories is not accumulated. Generally, it was found that a significant amount of personnel and other support costs are provided under the organizational overhead cost umbrella. Additionally, detailed cost breakouts for field organizations tasked to support a project were generally not available. These findings are particularly pertinent to efforts performed during the milestones leading to Deployment/Operation.

The lack of aggregate uniform cost data for model development and validation resulted in a revised approach to the modeling portion of this effort. The development of a composite, generic model based upon extraction of cost factors identified from analysis of the selected projects was undertaken. The advantages of this approach include the incorporation of unique cost factors which may influence project costs and the potential for further refinement and use of the model in a decision support environment. The primary disadvantage of the revised approach is the inability to validate the model based upon current data available.

The Interactive Financial Planning System (IFPS), marketed through Execucom Systems Corporation of Austin, Texas, was selected for model development. IFPS provides

for natural language development of financial planning models. In addition to built-in financial, statistical, and mathematical functions, IFPS is capable of performing interactive what if, sensitivity, and goal seeking analyses. Additionally, IFPS is capable of performing risk analysis through simulation (Monte Carlo analysis). The extensive, natural language modeling capabilities and the flexibility of IFPS combined with its availability for a number of different manufacturer's equipments, made IFPS a natural selection for development of the composite model.

B. STOCK POINT ADP REPLACEMENT PROJECT

The Stock Point ADP Replacement Project was initiated in October 1980 as a major modification to the Uniform Automated Data Processing System for Stock Points (UADPS-SP) which is operational at over forty Navy and Marine Corps activities. The modification envisioned encompasses replacement of ADP systems supporting the host UADPS-SP operating sites and reprogramming of UADPS-SP software.

UADPS-SP is an inventory/financial automated data processing system designed to provide management at Navy stock points and selected other activities with an interactive, integrated supply and financial management capability. The system was developed in the early 1960's to operate on IBM 1410 computers. In the early 1970's the UADPS-SP system was upgraded for operation on mid-range Burroughs hardware.

As a result of growth in the processing workload, current hardware configurations have reached, or are approaching, the upper limits of their capacity as they are presently configured. Additionally, changes in the types of workloads processed under UADPS-SP have been experienced. Many of the original batch processing applications have been redesigned to operate in an interactive mode to support

changing operational requirements. The existing hardware and software configurations do not support the current interactive processing requirements effectively.

It is interesting to note that the current system was procured in 1971 based on specifications developed in 1968 and implemented on equipment first announced in 1966. The contract negotiated with the Burroughs Corporation was based on an anticipated five year systems life. The first systems were installed in 1972. An important consequence is that Burroughs will most likely discontinue all support, including spare parts, maintenance, and training in order to concentrate on new product lines. At present there are no known "third party" vendors to perform required maintenance for the equipment.

The Stock Point Replacement Project has divided implementation plans into three phases. The first phase involves the procurement of central processing unit (CPU) upgrades and peripheral equipment augmentation or replacement in order to sustain the current system until total replacement occurs. The second phase is dependent upon the Stock Point Logistics Integrated Communications Environment (SPLICE) Project to provide competitively selected minicomputers acting as foreground processors to relieve the current Burroughs system of communications handling functions. Additionally, the SPLICE minicomputers will replace current UADPS-SP satellite minicomputers. The third, and final, phase of the Replacement Project will involve replacement of the stock point ADP systems with competitively acquired equipment which will support the full range of UADPS-SP applications. This final phase will also involve the analysis and modernization of UADPS-SP applications and data bases to take advantage of state-of-the art technology. Additionally, contractual efforts are planned that will allow technological refreshment of the ADP systems on a

continuing basis when functionally and economically justified by changing operational requirements.

The Replacement Project has been designated as a major AIS as defined by DOD Directive 7920.1. Normally ASD(C) approval would be required at the prescribed decision points but approval authority has been delegated to the Navy with post-approval notification and appropriate documentation to be provided to ASD(C) for after-the-fact review. The Functional Manager for the Replacement Project is the Commander, Naval Supply Systems Command (NAVSUP) and the designated Project Manager is SUP 04. SUP 04 provides overall project control and management in accordance with the ADP life cycle management process described by NAVDAC Publications 24.1 and 24.2. The current project schedule is provided in Figure 4.1 and addresses life cycle management, acquisition, and modernization activities through project completion in 1992. Presently the Replacement Project has obtained SDP I approval and is progressing rapidly toward SDP II (Definition/Design) submission.

The management organization that supports the Project is complex and extensive. The functional sponsor is the Chief of Naval Operations, (OP 41) and the functional manager, as mentioned previously is NAVSUP. A project management organization has been established under SUP 00 (see Figure 4.2) which consists of the following elements:

- The Stock Point ADP Replacement Executive Board.

The Executive Board provides overall life cycle management policy and direction and establishes an executive forum for discussion and resolution of problems, actions and initiatives. It convenes as required but not less than semiannually and is comprised of sixteen (16) permanent members and forty-eight (48) associate members.

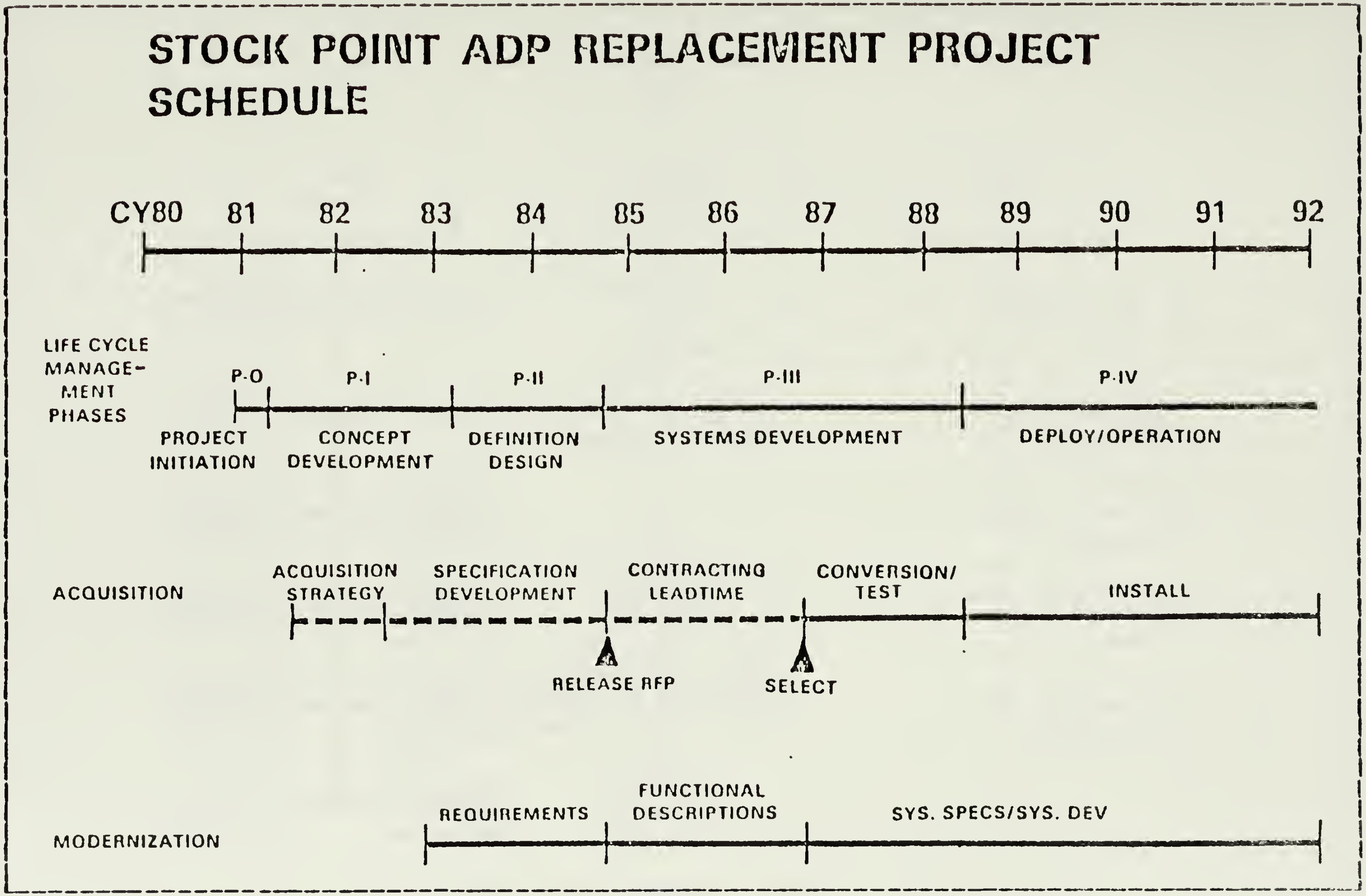


Figure 4.1 Stock Point ADP Replacement Project Schedule.

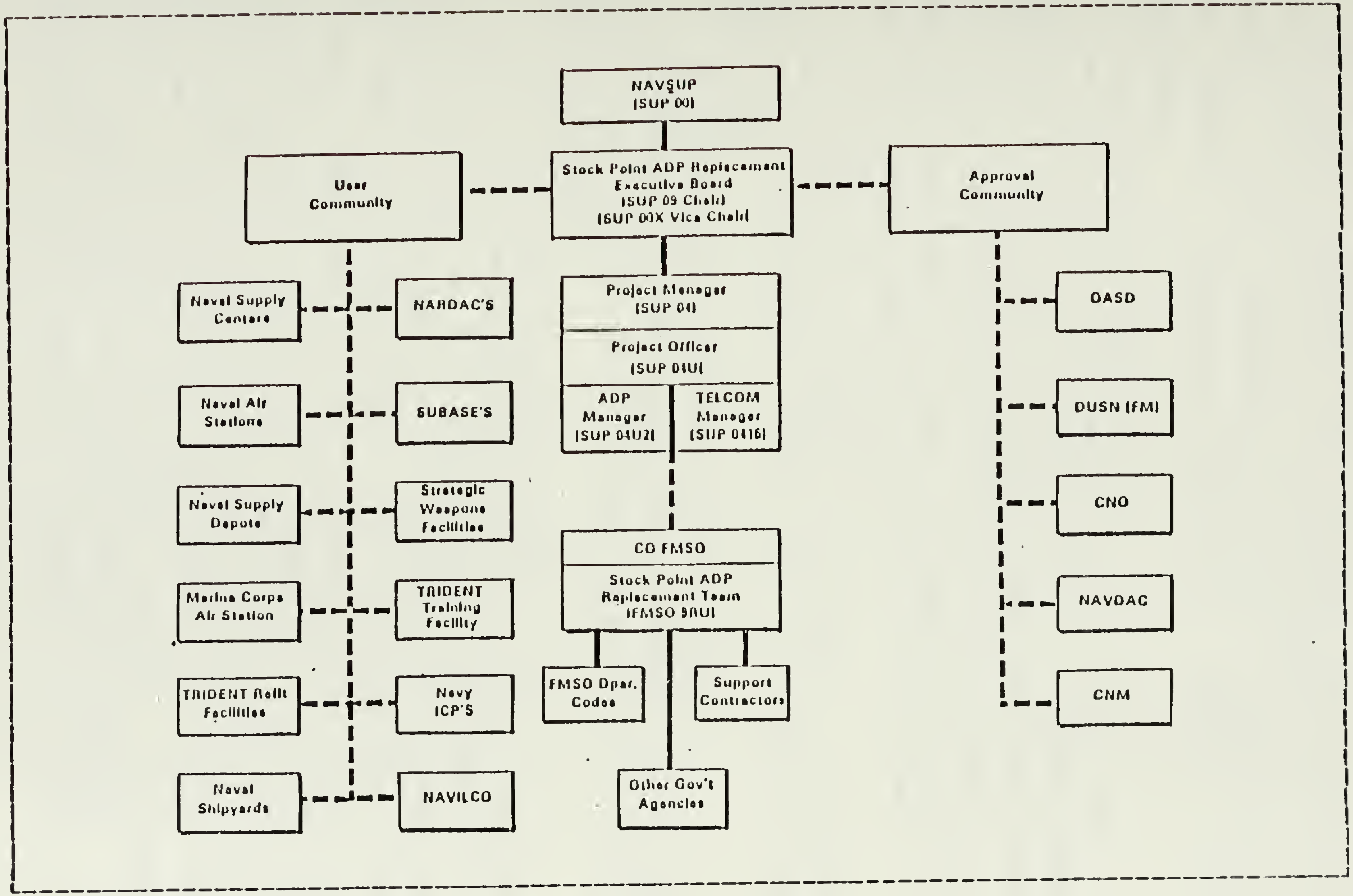


Figure 4.2 Stock Point ADP Replacement Project Organizational Relationships.

- The Replacement Project Manager.

The Deputy Commander for Inventory and Information Systems Development (SUP 04) is designated as the Project Manager. He is responsible for the life cycle management and technical leadership required to support project objectives.

- The Replacement Office.

The Replacement Office serves as the single focus of accountability for the Replacement Project. The Replacement Office is comprised of a permanent staff of seven members and liaison representatives from seven major commands. In addition, this office may task the NAVSUP matrix organization for required resources in eight functional areas.

- The Replacement ADP Manager.

The Replacement ADP Manager is SUP 04U2. He functions through the Replacement Office with no separate staff identified.

- The Replacement Telecommunications Manager.

The Replacement Telecommunications Manager is SUP 0415. He functions through the Replacement Office with no separate staff identified.

- Stock Point ADP Replacement Team.

The Stock Point Replacement Team is under the direction of the Navy Fleet Material Support Office (FMSO 9RU). It is comprised of three components; the Functional Strategy Team, the Functional Review Group, and the Functional Policy Council. The Functional Strategy Team is made up of a core of supply system analysts and is augmented by select stock point users and FMSO system designers. The Functional Review Group is comprised of thirty (30) mid-level managers from the Stock Points and senior functional managers from NAVSUP. Its purpose is to review, correct, and approve system design efforts of the Functional Strategy Team. The Functional Policy Council is comprised of thirteen (13)

senior managers from the user community who act to insure that all functional and policy objectives have been satisfied in the systems design.

The Stock Point Replacement Project, as evidenced by the broad project scope and extensive project management organizational structure, is a large and complex effort. Estimated total life cycle costs for the project exceed $945 million and project management concerns span the full spectrum of life cycle cost considerations: hardware acquisition, maintenance and replacement; software development, conversion and maintenance; facilities modification and construction; training; security; budgeting; and logistics support.

C. INVENTORY CONTROL POINT (ICP) RESOLICITATION PROJECT

The Naval Supply Systems Command (NAVSUP) initiated the ICP Resolicitation Project. This major AIS requires the replacement of ADPE and reprogramming of applications and environmental software resident at the Aviation Supply Office (ASO) and the Ships Parts Control Center (SPCC) data centers. ADP systems which are run on the hardware to be replaced are: the Uniform Inventory Control Point (UICP) System, the Conventional Ammunition Integrated Management System (CAIMS), the Material Maintenance Management (3M) System, and selected systems used by TRIDENT, NAVAIR, NAVSEA, NAVELEX, and others.

In March 1977, the Resolicitation Project was established under the existing 1977 acquisition guidelines utilizing Automated Data System/Telecommunication Subsystem Project procedures. Three principal organizations were established to support the project:

- The Resolicitation Project Executive Board (REB). This board is chaired by NAVSUP 09 and consists of NAVSUP

COX, C4, and 049; the commanding officers of ASO, FMSO, NPFC and SPCC; logistic representatives from the hardware system commands and headquarters management representatives from NAVSUP, NAVMAT, NAVCOMPT, NAVDAC, CNO, DUSN(FM) and OASD (MRAL and C). Its mission is to provide overall policy and direction, resolve problems, keep members fully apprised of plans and schedules, and ensure support for the project among the various participating commands.

- The Resolicitation Project Office, NAVSUP 04R. NAVSUP 04R is the Project Officer. This office is the working staff to the REB and provides the technical and logistics leadership to support the project directives.
- The Resolicitation Project Team, FMSO 09R. This office develops and monitors detailed plans and milestones to accomplish the Resolicitation Project objectives including the definition of system requirements, acquistion of the new hardware, and transition from the current hardware to the replacement hardware.

Other Resolicitation organizations are discussed in the following paragraphs.

This Project was developed to fulfill NAVSUP's logistic responsibilities beyond the year 2000 by exploiting "the advanced technology inherent in the new hardware and software systems under acquisition." To best carry out this mission, the acquisition strategy includes a contractual ability to refresh system technology without continuous requests to GSA. The Resolicitation Project itself consists of four phases: Requirements Definition, Acquisition, Transition, and Resystemization. Figure 4.3 provides a schedule of each of these phases.

The Requirements Definitions phase was initiated by the establishment of a Requirements Definition Task Force (RED) that consisted of representatives from NAVSUP, the ICP's,

```
CALENDAR YEAR
77  78  79  80  81  82  83  84  85  86  87  88  89  90
|----RQMTS DEFINITION---|
     |-------------ACQUISITION--------------|
         |-------TRANSITION--------|
               |----------RESYSTEMIZATION---------|
```

Figure 4.3 Resolicitation Project's Phased Schedule.

FMSO, NPFC, and the SYSCOM's. Their goal was the identification of all requirements internal to the managements of the ICP's in support of core logistic functions. These efforts began in April 1977 and included hardware, systems and functional concepts. User commands were afforded the oppurtunity to review and comment on the draft requirements prior to COMNAVSUP approval in February 1978. The defined requirements were then utilized to identify 132 separate functions that were converted to Requirement Statements (RS) after a formal review by all user commands. Upon completion of this action in January 1980, the RS's were subjected to extensive analysis by FMSO/contractor personnel and were included in the ADS/TSP Plan and the "new system" segment of the Solicitation Document dated 31 December 1981.

The Acquisition Phase contains three fundamental areas: Pre-Award Activities, Contract Award, and Equipment Installation. Pre- Award activities included the approval of the ADS/TSP Plan by DUSN(FM) in January 1981 and the receipt of DPA from GSA in August 1981. A Specification Selection Team was formed to prepare the Solicitation Document and in mid-1981 Letters of Interest were sent to industry. Following this action, vendor conferences were

held, and formal release of the completed Solicitation Document to industry occurred in December 1981.

Preliminary vendor responses signalled the commencement of the contract award portion of the Acquisition phase. The SSAC identified three vendors as best qualified to satisfy ICP requirements based upon the evaluation of all proposals by the SSEB. In August 1982, the benchmark package was approved by the SSEB and a cost reimbursable contract for up to $400,000 was issued to each of the three vendors for development of technical and cost proposals. Sperry-Univac elected to drop out of the competition prior to submission of proposals and benchmark tests were completed on the remaining two proposals in July 1983. The SSEB evaluated the proposals and the SSAC recommended selection of Electronic Data Systems (with IBM as a subcontractor). Honeywell objected to the evaluation criteria and formally appealed. While this appeal was denied, contract award was rescheduled for January 1984. However, the House Committee on Government Operations took interest in the "perceived" lack of competition and prohibited contract award. Negotiations between NAVSUP/ADPSO and HCOGO members are underway to break this deadlock.

Equipment Installation is the last portion of the Acquisition Phase and is tentatively scheduled for incremental installment in calendar years 1984 through 1987 to support Transition and Resystemization as discussed below.

> The Transition phase of Resolicitation includes the interim augmentation of current hardware/software configurations, conversion of the remaining assembler language programs to COBOL and the transition of all programs and files to the new hardware. These tasks are separately described in the following paragraphs:

Current hardware and software were provided interim configuration augmentations to enhance the ADPE capacity and scheduling flexibility in support of COBOL conversion and transition testing. Additional hardware installed included:

- One additional U494 for SPCC and ASO and upgrades of all U494 at these sites.
- One IBM 3032 was acquired and a 360/65 was upgraded to a 370/165 to support SPCC operations.
- Software enhancements were developed to allow file updates from any of the four U494 processes thereby increasing flexibility for future Resolicitation workload.

COBOL Conversion applies only to the UICP system and involves converting UICP item record files to a COBOL compatible format and all assembly language programs to COBOL '68. These actions necessitated additional changes to one of the data management programs. The objective of the above actions was to convert all programs and validate their accuracy prior to transition to the newly acquired hardware. Conversion to COBOL resulted in larger programs that run longer.

The last part of the Transition Phase involves the establishment of two new organizations, the Transition Planning Team and the Transition Contracting Team, to develop the plans to transition systems operating on ASO and SPCC ADPE to the new Brand R (Resolicitation) hardware. The Federal Conversion Support Center (FCSC) plays a key role in each of these organizations: (1) FCSC personnel are funded to act as staff to NAVSUP C4R and FMSO 9R, and (2) FCSC is funded to act as the contracting office for Transition contracts. Transition provides for the conversion of approximately 6000 programs from COBOL '68 to COBOL '74, the development of new, on-line central data bases for the new hardware and acquired Data Base Management System, and parallel operations of new and old hardware.

Resystemization is the last phase of the Resolicitation project. The primary thrust of this effort is to redevelop the UICP, CAIMS, 3M, and NPFC unique systems to improve logistics management and exploit the new hardware and its software capabilities. To accomplish the Resystemization objective, NAVSUP letter 04R2/RWD of 3 December 1980 established additional organizational entities for the purpose of planning and managing this effort. The ad-hoc Blue Ribbon (BLUE) team is comprised of representatives of each user, the central design agent (CDA), and system proponent. Its purpose is to oversee the design, development, and integration of applications software assuring the utilization of state-of-the-art system design techniques. The Blue team determined that a Green Team was needed to provide formal support of the systems design and development for each group of closely related applications. Fourteen (14) user oriented Green teams have been formed with representatives from each user, the CDA, and the system proponent. Lastly, a Policy Review Council has been established to act on behalf of the REB to review reports, provide guidance, and approve all Resystemization policy and concepts.

Other cost elements not directly addressed above but which are integral to the success of the Resolicitation Project are: Training, Travel, Materials, Security and Site Preparation/Modification (to include Military Construction (MILCON) Projects and Exigent Minor Military Construction (EMM)).

D. SHIPBOARD NON-TACTICAL ADP PROGRAM (SNAP) I, PHASE 2

SNAP I is one of three separate automated information systems targeted to improve shipboard productivity. SNAP I provides replacement hardware for the AN/UYK-5 (Univac 1500) procured in the mid-sixties and furnishes user interactive

real time software to the larger ships of the United States Navy, Marine Air Groups (MAG), and selected shore sites. A phased approach is planned for SNAP I with Phase 1 replacement of tape drives and printers for the AN/UYK-5 system completed in May 1980. SNAP I, Phase 2 seeks to:

- Replace the AN/UYK-5 with non-tactical off-the-shelf equipment ruggedized to support deployed environments.
- Process existing shipboard supply and intermediate maintenance in an emulation mode and aviation related programs in a native mode.
- Redesign the above existing application programs to exploit SNAP I replacement hardware capabilities and furnish an interactive real time capability.
- Subsequently, provide a user interactive real time ADP capability for other deficient functional areas.

Application software systems are planned to overcome the manual effort currently utilized to support an increasingly complex operating environment. The goal of improved Fleet support demands timely and accurate exchanges of information, and three major functional areas have been identified for application subsystem development as follows:

- Maintenance Function
  - i) Intermediate Maintenance Management Subsystem Real Time (IMMS-RT).
  - ii) Organizational Maintenance Management Subsystem (OMMS).
  - iii) Planned Maintenance Subsystem (PMS).
  - iv) Technical Library/NTIPS.
  - v) Aviation Maintenance and Material Management Subsystem (AIR 3M).
  - vi) Support and Test Equipment (S&TE)/MEASURE.
- Supply Function
  - i) Shipboard Uniform Automated Data Processing Subsystem Real Time (SUADPS-RT).

  - ii) Food Service (FOOD SVC).
  - iii) Retail Operations (RETAIL OPS).
- Administrative Function
  - i) Administrative Data Management (ADM) Subsystem.
  - ii) Pay and Personnel Source Data Subsystem Afloat (SDSA).
  - iii) Medical and Dental (MED/DENT).
  - iv) Shipboard Training/Education Management Subsystem (STEMS).

SNAP I, Phase 2 has been designated a Major AIS in accordance with DOD Directive 7920.1 and SECNAVINST 5231.1A. Initial project submission and approval was accomplished through use of NAVDAC Advisory Bulletin Number 21. The program manager is the Fleet Information Systems Office, NAVMAT (09B6). Resource requirements to develop, deploy and provide life cycle support are the responsibility of three subclaimants:

- Naval Sea Systems Command (NAVSEA) maintains the project office for SNAP ADPE installation and life cycle Integrated Logistics Support (ILS).
- Navy Management System Support Office (NAVMASSO) performs Central Design Activity (CDA) functions for SNAP by designing, developing, and implementing user interactive real time software and its associated life cycle support.
- Navy Maintenance Support Office (NAMSO) is a department within the Ships Parts Control Center that maintains the central data bank for maintenance statistics, reports, and data bases.

The SNAP I, Phase 2 AIS project was approved in January 1979 and interim actions were completed leading to the issuance of a solicitation document in December 1979. Despite preliminary interest by various vendors no proposals were received by the established closing date in July 1980.

Changes were incorporated into a revised solicitation document that was issued in September 1980. Due to the phased implementation desired by the Navy, the key element in any prospective vendor's proposal was the ability to provide new hardware with emulation capability for the AN/UYK-5 system. To facilitate competition, the Navy offered vendors up to $1,000,000 each for expenses necessary to achieve emulation capability. Proposals were received in January 1981 and initial evaluation and ranking was completed in May 1981. Benchmarks commenced in July 1981 and were completed in August 1981. One area unique to this procurement was the Navy requirement to perform simultaneous benchmarks for the two vendors. This action generated a requirement for double the number of personnel required to participate in the benchmark process.

Revised proposals were requested in October 1981 and received in December 1981. Subsequently, negotiations were completed and best and final offers requested in April 1982. SECNAV approval of the SSAC-recommended selection occurred in May 1982, and a $603 million contract was awarded to Honeywell on 1 June 1982 for the hardware and associated systems software. ADPSO records revealed that total hours utilized from acquisition inception to completion was 63,394, of which ADPSO's portion was 10,847. Secretarial hours were accounted for separately and totaled 1853 hours. Other figures of interest were the sixteen amendments that were issued to the solicitation document between September 1980 and April 1982 and the nine supplements to the solicitation document between November 1980 and January 1981. The thirty (30) month acquisition process is considered an aberration and should represent a worst case scenario for both time and resources required.

E. MODEL DEVELOPMENT

One of the most important goals of a major AIS acquisition is to consistently and clearly communicate the real cost of a program to decision makers at each milestone. This is especially critical when the decision point involves a tradeoff between two or more options. Under LCM guidelines the decision maker utilizes an economic analysis to make an initial decision and to subsequently verify that the decision was justified. Preliminary to economic analysis is a requirement that all cost elements be identified. The model contained in Appendix C provides an initial attempt at identifying those cost elements that impact on the MENS, SDP 1, SDP II, and SDP III approvals, that is, from project inception to final decision to deploy and operate the complete AIS. The cost elements contained in the model were abstracted from available project manager records for the three major AIS's already discussed. The English-like terminology contained in the model is attributable to IFPS's utilization of a natural language approach to the development of customized applications. Sample input datafiles are provided in Appendix D and sample output resulting from model execution is provided in Appendix E.

IFPS provides on-line editing capability to add, delete, combine or reorganize model or datafile elements. Additionally, although not utilized for this baseline model development, IFPS provides report formatting and generation capabilities sufficient to meet most report presentation requirements. One of the primary benefits of IFPS for future development and utilization of the baseline model is the decision support capability of the system. IFPS commands allow the user to "ask questions" of the model and receive answers without causing a permanent change to the model. The most important of the model analysis commands are:

- WHAT IF - allows user to temporarily alter the data and logic of the current model, in order to test assumptions and explore alternatives.
- GOAL SEEKING - allows user to specify goals and the variables affecting those goals; IFPS then calculates values for the variables that will achieve those goals.
- ANALYZE - breaks a variable into its constituent parts.
- IMPACT ON - allows user to investigate the response of a selected variable to changes in other variables.
- SENSITIVITY - steps the current model through a series of changes in a specified variable and prints the results at each step.
- MONTE CARLO - allows the user to perform risk analysis through simulation; IFPS solves the model a number of times based upon random model variable values within aspecified probability distribution (which overcomes the inherent inadequacies of single point estimates).

The baseline composite model was developed utilizing a "module" approach. Modules for the LCM phases leading up to the point of system acquisition were constructed utilizing a basic cost structure. This provides the user the flexibility to analyze costs by any single phase or combination of phases desired. Cost elements were identified within the cost structure for each module based upon analysis of the three AIS cases. Allowing for individual project differences, users may be required to add or delete cost elements. As a minimum, the user will have to decide upon the distribution of costs within each module (LCM phase).

The input of cost data by element within the body of the model was considered and rejected in favor of utilizing one or more datafiles. It was determined that the use of datafiles would enhance user flexibility and simplify editing functions. The sample datafile in Appendix D utilizes both single point values and probability distributions for values.

A final section was included in the model for the computation of lost opportunity costs. Opportunity costs were considered to be the projected yearly cost savings attributed to the new system. The opportunity cost stream was discounted back to start in year four based upon the reported private sector acquisition time of approximately three years [Ref. 28:2] for complex ADP systems. The computed "lost" opportunity costs were then added to total project costs to provide adjusted total cost figures which more accurately represented the true costs of the system.

The basic cost structure of each module and the specific cost elements identified for each module were derived from an analysis of the selected AIS cases and a synthesis of regulatory and organizational requirements. For example, the cost structure for personnel costs in each module is comprised of the following major categories:

- Project Office Personnel,
- Organizational Support Personnel,
- Support Activity Personnel,
- Executive Review Personnel,
- Approval Level Personnel, and
- Acquisition Processing Personnel.

Of these categories, AIS case analysis identified three (Project Office Personnel, Support Activity Personnel, Executive Review Personnel) while the remaining three categories (Organizational Support Personnel, Approval Level Personnel, Acquisition Processing Personnel) were identified on the basis of regulatory and organizational requirements. It should be noted that those categories of personnel costs attributed to regulatory and organizational requirements are seldom, if ever, accounted for in determining the cost of a project. Rather, those costs are absorbed as organizational overhead.

Within each of the major personnel cost categories a standardized cost element structure was established. Five gradations of personnel ranging from Clerical Personnel to Senior Executive Personnel were utilized. Yearly personnel costs as shown in the sample output (Appendix E) were computed by multiplying the number of man years of effort by a salary amount. The salary amount was generated by IFPS utilizing a triangular probability distribution function (TRIRAND). This IFPS function provided the capability of entering a probable range of values for salary rather than a single point estimate. The IFPS generated salary amount for the first year was then increased four percent per year for subsequent years.

The personnel data utilized in the datafile (Appendix D) is order of magnitude data for presentation purposes and is not specific to any of the AIS cases analyzed. However, even with the use of presentation-type data, the sample model output provided in Appendix E is capable of providing significant personnel cost relationships. For example, those categories of personnel costs identified by AIS case analysis account for approximately eighty percent of total personnel costs in the first year and steadily decline to about seventy percent for the last year. Obviously this means twenty to thirty percent of the total personnel costs are attributed to those cost categories resulting from regulatory and organizational requirements. Should this relationship exist for actual project data, the budgetary implications would be significant. The possibility of adequately budgeting direct project costs while severely under-budgeting organizational support costs would exist.

The cost structure for the remainder of the model reflects the same development approach as described for personnel costs. Cost elements under the major cost categories were developed from analysis of the AIS cases and from

the synthesis of regulatory and organizational requirements. It is important to note that the data utilized to demonstrate the model was organized such that there was no overlap of LCM phases. The construction of the model by LCM "module" recognizes this fact and allows for overlap of cost elements by year.

V. CONCLUSIONS AND RECOMMENDATIONS

A. CONCLUSIONS

The current regulations reviewed, case analyses conducted, and lengthy model developed illustrate the complexity of the approval and acquisition phases of major AIS procurement. Every major AIS is likely to experience the burden of this complexity. Cost increases, schedule delays, vendor disagreements, benchmarks, and a litany of late software projects permeate the major AIS acquisition arena. These problems are compounded by the geographic dispersion of users, developers, and approval authorities and the concomitant communication problems.

Prior to addressing the problem of how to improve an acquisition process that severly lags behind the private sector [Ref. 28] it is necessary to address where we are starting from. To this end, this thesis has provided an initial view of the Navy acquisition process and provided a generic model for future verification and use. The primary thrust of the model development was to provide a tool to stimulate project office thought on their ability to reflect actual costs of competition by capturing all known cost elements. The end result is expected to be improved economic analysis, budget estimates, and overall project management.

B. RECOMMENDATIONS

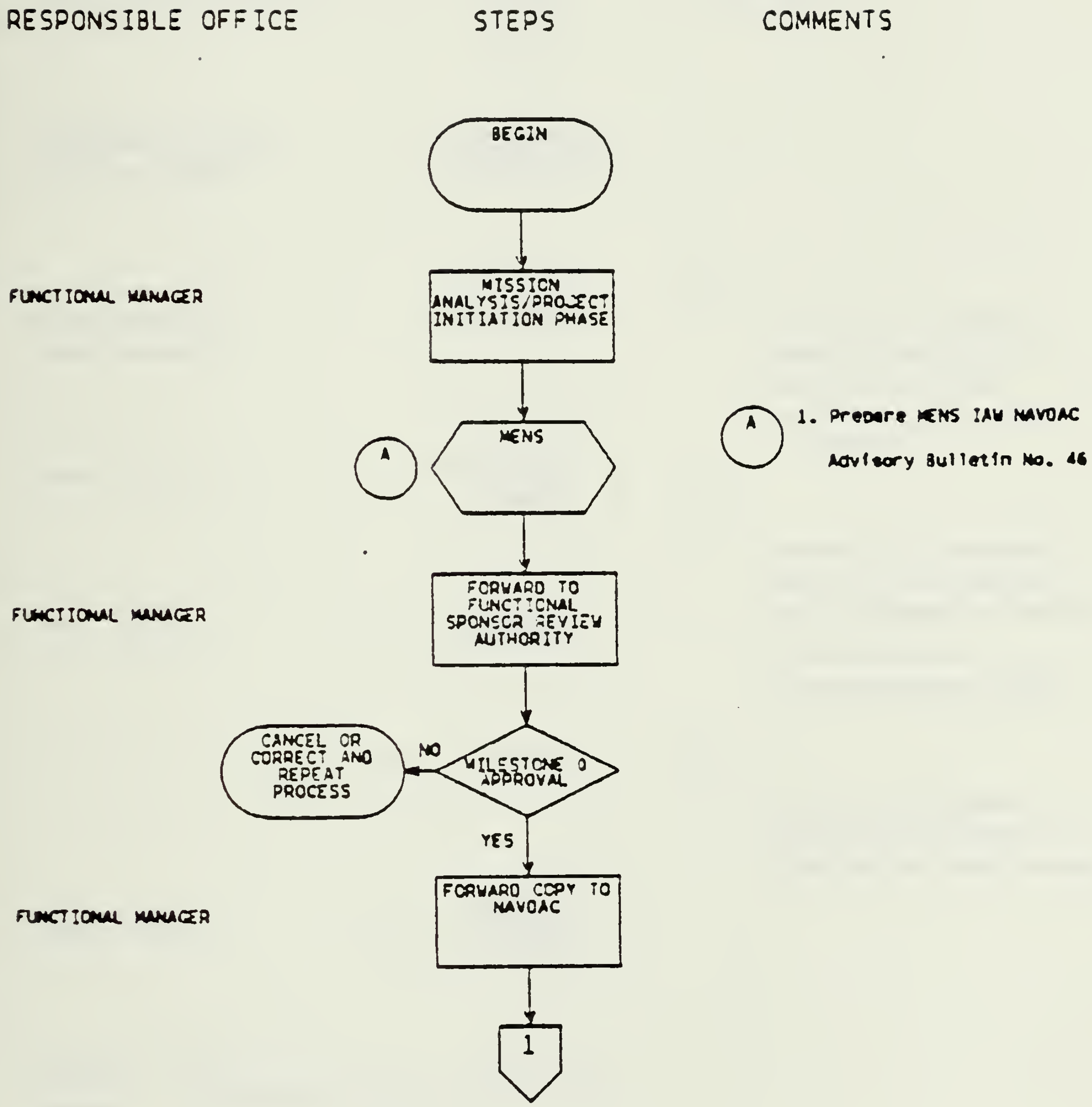
- Recommendation Number 1: In order to facilitate capture of complete project cost data, job order numbers should be assigned to specific AIS projects based on time card usage by all personnel. Oftentimes headquarters, development, and review personnel hours

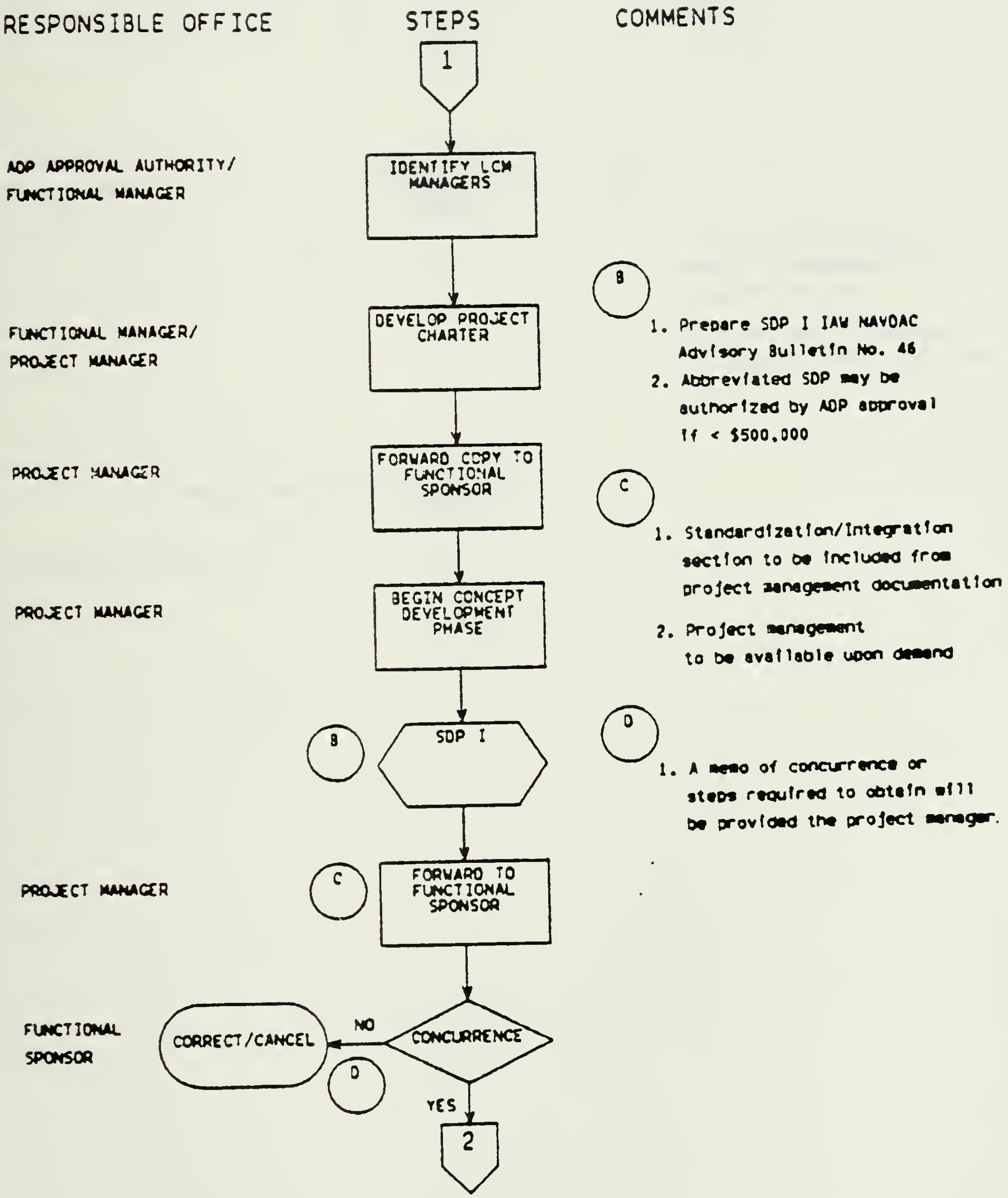
are not captured resulting in an understatement of personnel costs.

- Recommendation Number 2: Conduct further development, validation, and verification of the baseline model in Appendix C through evaluation of additional AIS projects. Investigate the potential of the model for use in development of decision support system applications.
- Recommendation Number 3: Upon completion of model verification and validation perform an analysis of private sector companies. Utilizing the composite model, compare and analyze the differences between the government and private sector methodologies.
- Recommendation Number 4: Investigate the development of a standardized Navy and/or Government software product to assist project office personnel in estimating costs. Currently, the various project offices contract out many of the cost estimating and cost management functions, including POA and M development and PERT charts.

APPENDIX A

SYSTEM DEVELOPMENT APPROVAL FLOW


RESPONSIBLE OFFICE
STEPS
COMMENTS
BEGIN
FUNCTIONAL MANAGER
MISSION ANALYSIS/PROJECT INITIATION PHASE
MENS
A
A
1. Prepare MENS IAW NAVDAC Advisory Bulletin No. 46
FUNCTIONAL MANAGER
FORWARD TO FUNCTIONAL SPONSOR REVIEW AUTHORITY
MILESTONE 0 APPROVAL
NO
CANCEL OR CORRECT AND REPEAT PROCESS
YES
FUNCTIONAL MANAGER
FORWARD COPY TO NAVDAC
1



B

1. Prepare SDP I IAW NAVDAC Advisory Bulletin No. 46
2. Abbreviated SDP may be authorized by ADP approval if < $500,000

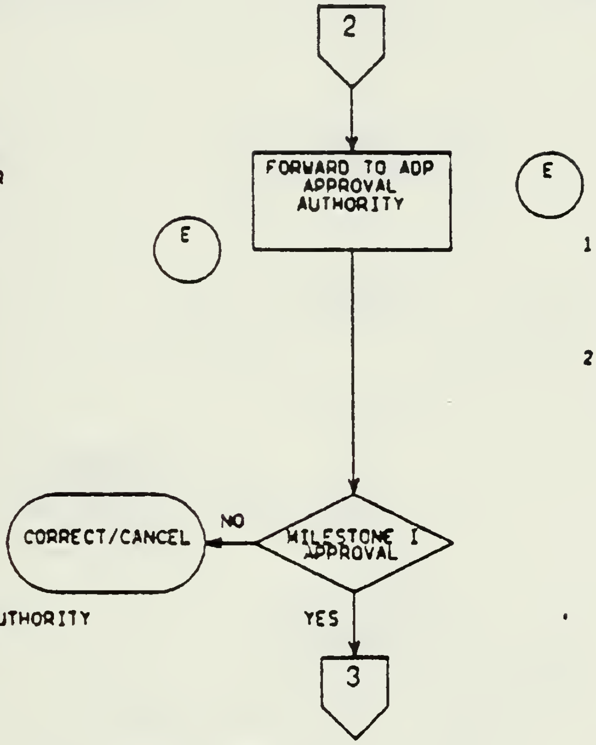
C

1. Standardization/Integration section to be included from project management documentation
2. Project management to be available upon demand

D

1. A memo of concurrence or steps required to obtain will be provided the project manager.

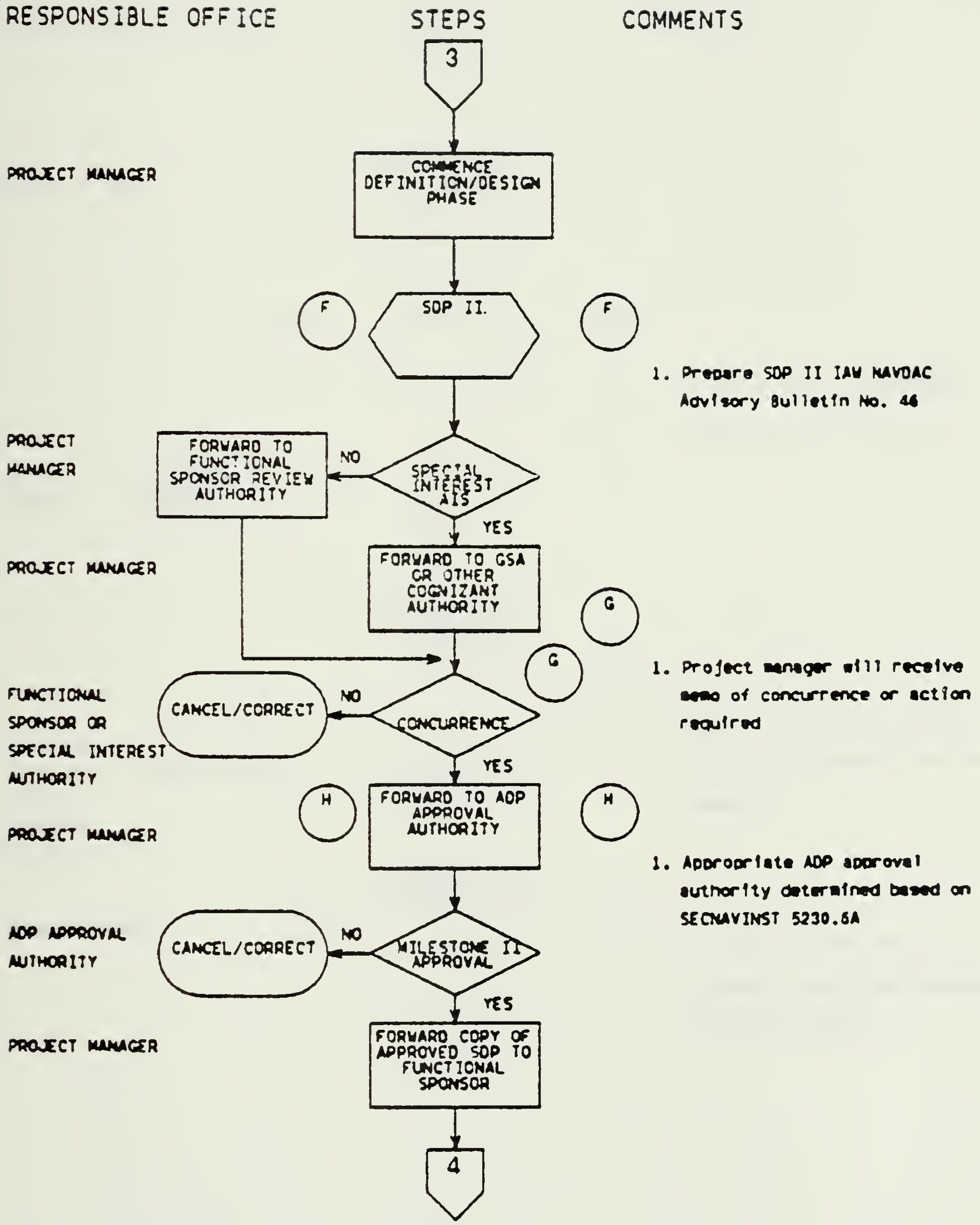
RESPONSIBLE OFFICE STEPS COMMENTS



PROJECT MANAGER

1. Appropriate ADP approval authority determined based on SECNAVINST 5230.6A
2. If SECNAV approval required forwarded thru NAVDAC and OP-945

ADP APPROVAL AUTHORITY

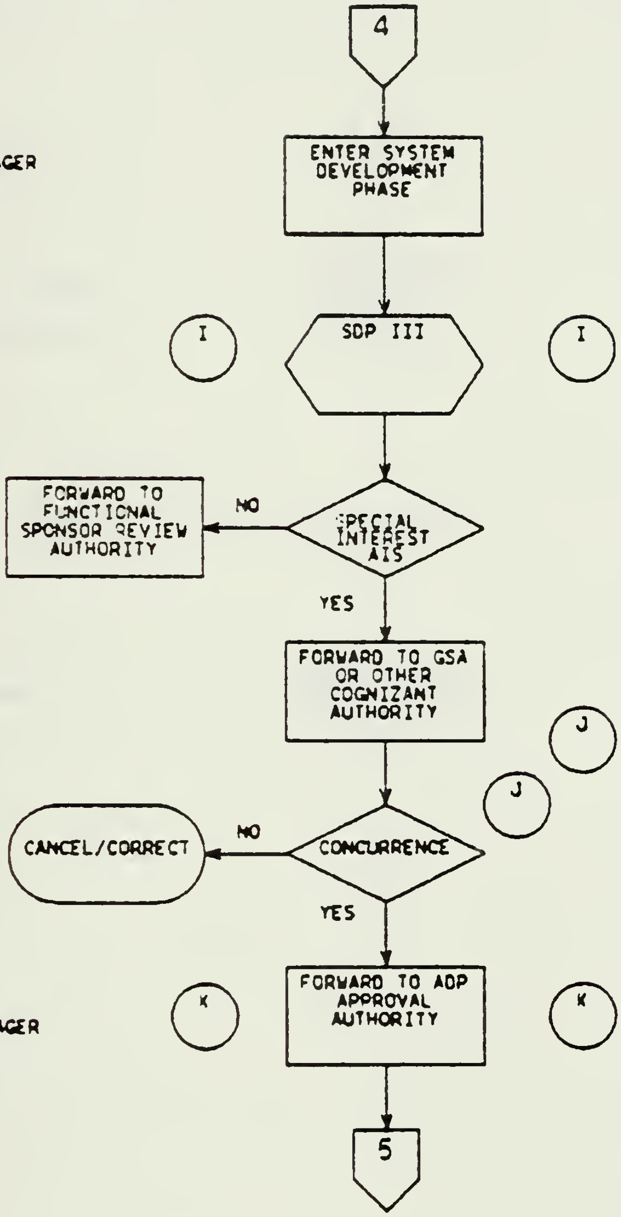

RESPONSIBLE OFFICE
STEPS
COMMENTS
3
PROJECT MANAGER
COMMENCE DEFINITION/DESIGN PHASE
F
SDP II.
F
PROJECT MANAGER
FORWARD TO FUNCTIONAL SPONSOR REVIEW AUTHORITY
NO
SPECIAL INTEREST AIS
YES
PROJECT MANAGER
FORWARD TO GSA OR OTHER COGNIZANT AUTHORITY
G
G
FUNCTIONAL SPONSOR OR SPECIAL INTEREST AUTHORITY
CANCEL/CORRECT
NO
CONCURRENCE
YES
H
FORWARD TO ADP APPROVAL AUTHORITY
H
PROJECT MANAGER
ADP APPROVAL AUTHORITY
CANCEL/CORRECT
NO
MILESTONE II APPROVAL
YES
PROJECT MANAGER
FORWARD COPY OF APPROVED SDP TO FUNCTIONAL SPONSOR
4

1. Prepare SDP II IAW NAVDAC Advisory Bulletin No. 46

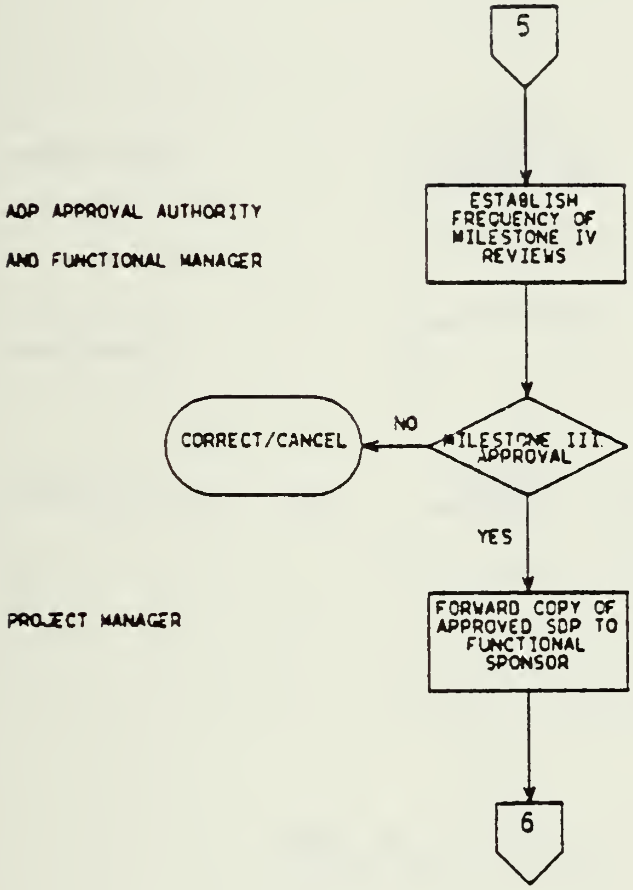
1. Project manager will receive memo of concurrence or action required

1. Appropriate ADP approval authority determined based on SECNAVINST 5230.6A

RESPONSIBLE OFFICE	STEPS	COMMENTS
PROJECT MANAGER	ENTER SYSTEM DEVELOPMENT PHASE	
	SDP III	1. Prepare SDP III IAW NAVDAC Advisory Bulletin No. 46
PROJECT MANAGER	SPECIAL INTEREST AIS NO: FORWARD TO FUNCTIONAL SPONSOR REVIEW AUTHORITY YES: FORWARD TO GSA OR OTHER COGNIZANT AUTHORITY	
FUNCTIONAL SPONSOR OR SPECIAL INTEREST AUTHORITY	CONCURRENCE NO: CANCEL/CORRECT	1. Project manager will receive memo of concurrence or action required
PROJECT MANAGER	FORWARD TO ADP APPROVAL AUTHORITY	1. Appropriate ADP approval authority determined based on SECNAVINST 5230.6A


4
ENTER SYSTEM DEVELOPMENT PHASE
I
SDP III
I
FORWARD TO FUNCTIONAL SPONSOR REVIEW AUTHORITY
NO
SPECIAL INTEREST AIS
YES
FORWARD TO GSA OR OTHER COGNIZANT AUTHORITY
J
J
CANCEL/CORRECT
NO
CONCURRENCE
YES
K
FORWARD TO ADP APPROVAL AUTHORITY
K
5

RESPONSIBLE OFFICE STEPS COMMENTS

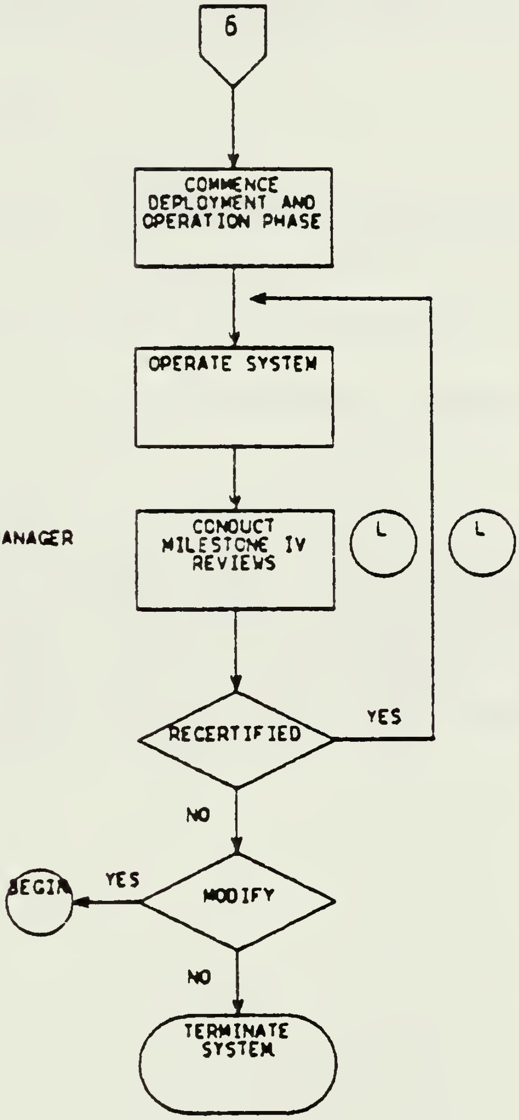


RESPONSIBLE OFFICE STEPS COMMENTS

PROJECT MANAGER

SYSTEM MANAGER

SYSTEM AND FUNCTIONAL MANAGER


6
COMMENCE DEPLOYMENT AND OPERATION PHASE
OPERATE SYSTEM
CONDUCT MILESTONE IV REVIEWS
L
L
RECERTIFIED
YES
NO
MODIFY
YES
BEGIN
NO
TERMINATE SYSTEM

1. Reviews will be conducted IAW schedule established at Milestone III

APPENDIX E

DOD WIDE GUIDELINES ON BROOK'S EXEMPT SYSTEMS

Critical to the Direct Fulfillment of Military or Intelligence Missions: Computer resources in or used in the research and development of:

(1) Systems that will deploy as mission support in a combat environment;

(2) War planning systems;

(3) Environmental systems supporting military missions, e.g., weather, oceanographic, or satellite systems;

(4) Projects the existence of which is classified;

(5) Warning, surveillance, reconnaissance and electronic warfare systems;

(6) Mapping, charting, and geodesy systems;

(7) Airlift, sealift, and port facilities systems;

(8) Military communications systems;

(9) Logistics systems which provide direct support to operating forces or provide direct support to maintenance of weapons systems (e.g. organic supply, software support facilities for weapon systems, etc.). This exemption does not include logistics systems supporting contracting, accounting, disbursement and budgeting, etc. This exemption does not include the Air Force Phase IV Acquisition or the Army Commodity Command Standard System Acquisition Programs.

APPENDIX C

IFPS PROJECT DEVELOPMENT COST MODEL

```
FILE: FILET    IFPS     A1  NAVAL POSTGRADUATE SCHOOL                                           PAGE 001

FILE    MODEL   PROJMOD 03/17/8416:53:05
10      *********************************************************************************************************
20      ***************************************** PROJECT DEVELOPMENT COST MODEL *******************************
30      *********************************************************************************************************
40      *
50      *
60      *          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
70      *          ||        THE FOLLOWING COST MODEL IS DIVIDED INTO FOUR MODULES: MENS, SDP1, SDP2, AND SDP3.   ||
80      *          ||        EACH MODULE PROVIDES A COST ELEMENT BREAKDOWN BY YEAR FOR THE MAJOR COST ELEMENTS     ||
90      *          ||        OR CATEGORIES IDENTIFIED AS GERMAINE TO MAJOR AIS ACQUISITION PROJECTS.  ALL          ||
100     *          ||        MODEL VARIABLES ARE ASSIGNED A ZERO VALUE WHICH REQUIRES THE USE OF AN IFPS DATA      ||
110     *          ||        FILE TO INPUT DESIRED VALUES FOR EACH VARIABLE.  USERS DESIRING TO ADD, DELETE        ||
120     *          ||        OR CHANGE VARIABLES OR COMPUTATIONS ARE REFERRED TO THE IFPS USERS MANUAL             ||
130     *          ||        RELEASE 9.0 (EXECUCOM SYSTEMS CORPORATION, P.O. BOX 9758, AUSTIN, TEXAS 78766).       ||
140     *          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
150     *
160     *
170     *
180     *
190     COLUMNS YR1,YR2,YR3,YR4,YR5,YR6,YR7,YR8
200     *********************************************************************************************************
210     *************************************** PERSONNEL YEARLY SALARIES **************************************
220     *
230        SENIOR EXEC SALARY = 0
240        EXEC SALARY = 0
250        MGT SALARY = 0
260        TECH SALARY = 0
270        CLERICAL SALARY = 0
280     *
290     *********************************************************************************************************
300     ******************************************** MENS COST MODULE *******************************************
310     *
320     *
330     *************** PERSONNEL COSTS ***************
340     *
350     *
360     ***** PROJECT OFFICE PERSONNEL *****
370     *
380       PO SENIOR EXEC PERS MENS = 0
390       PO EXEC PERS MENS = 0
400       PO MGT PERS MENS = 0
410       PO TECH PERS MENS = 0
420       PO CLERICAL PERS MENS = 0
430     *
440       PO SENIOR EXEC PERS COST MENS = PO SENIOR EXEC PERS MENS * SENIOR EXEC SALARY
450       PO EXEC PERS COST MENS = PO EXEC PERS MENS * EXEC SALARY
460       PO MGT PERS COST MENS = PO MGT PERS MENS * MGT SALARY
470       PO TECH PERS COST MENS = PO TECH PERS MENS * TECH SALARY
480       PO CLERICAL PERS COST MENS = PO CLERICAL PERS MENS * CLERICAL SALARY
490     *
500       TOTAL PO PERS COST MENS = PO SENIOR EXEC PERS COST MENS + PO EXEC PERS COST MENS + PO MGT PERS COST MENS + '
510                                 PO TECH PERS COST MENS + PO CLERICAL PERS COST MENS
520     *
530     *
540     ***** ORGANIZATIONAL SUPPORT PERSONNEL *****
550     *
560        OS SENIOR EXEC PERS MENS = 0
570        OS EXEC PERS MENS = 0
580        OS MGT PERS MENS = 0
590        OS TECH PERS MENS = 0
600        OS CLERICAL PERS MENS = 0
610     *
620        OS SENIOR EXEC PERS COST MENS = OS SENIOR EXEC PERS MENS * SENIOR EXEC SALARY
630        OS EXEC PERS COST MENS = OS EXEC PERS MENS * EXEC SALARY
640        OS MGT PERS COST MENS = OS MGT PERS MENS * MGT SALARY
650        OS TECH PERS COST MENS = OS TECH PERS MENS * TECH SALARY
660        OS CLERICAL PERS COST MENS = OS CLERICAL PERS MENS * CLERICAL SALARY
670     *
680        TOTAL OS PERS COST MENS = OS SENIOR EXEC PERS COST MENS + OS EXEC PERS COST MENS + '
690                                  OS MGT PERS COST MENS + OS TECH PERS COST MENS + OS CLERICAL PERS COST MENS
700     *
710     *
```

```
720     ***** SUPPORT ACTIVITY PERSONNEL  *****
730     *
740         SA SENIOR EXEC PERS MENS = 0
750         SA EXEC PERS MENS = 0
760         SA MGT PERS MENS = 0
770         SA TECH PERS MENS = 0
780         SA CLERICAL PERS MENS = 0
790     *
800         SA SENIOR EXEC PERS COST MENS = SA SENIOR EXEC PERS MENS * SENIOR EXEC SALARY
810         SA EXEC PERS COST MENS = SA EXEC PERS MENS * EXEC SALARY
820         SA MGT PERS COST MENS = SA MGT PERS MENS * MGT SALARY
830         SA TECH PERS COST MENS = SA TECH PERS MENS * TECH SALARY
840         SA CLERICAL PERS COST MENS = SA CLERICAL PERS MENS * CLERICAL SALARY
850     *
860         TOTAL SA PERS COST MENS = SA SENIOR EXEC PERS COST MENS + SA EXEC PERS COST MENS '
870                                 + SA MGT PERS COST MENS + SA TECH PERS COST MENS + '
880                                 SA CLERICAL PERS COST MENS
890     *
900     *
910     ***** EXECUTIVE REVIEW PERSONNEL *****
920     *
930         ER SENIOR EXEC PERS MENS = 0
940         ER EXEC PERS MENS = 0
950         ER MGT PERS MENS = 0
960         ER TECH PERS MENS = 0
970         ER CLERICAL PERS MENS = 0
980     *
990         ER SENIOR EXEC PERS COST MENS = ER SENIOR EXEC PERS MENS * SENIOR EXEC SALARY
1000         ER EXEC PERS COST MENS = ER EXEC PERS MENS * EXEC SALARY
1010         ER MGT PERS COST MENS = ER MGT PERS MENS * MGT SALARY
1020         ER TECH PERS COST MENS = ER TECH PERS MENS * TECH SALARY
1030         ER CLERICAL PERS COST MENS = ER CLERICAL PERS MENS * CLERICAL SALARY
1040     *
1050         TOTAL ER PERS COST MENS = ER SENIOR EXEC PERS COST MENS + ER EXEC PERS COST MENS '
1060                                 + ER MGT PERS COST MENS + ER TECH PERS COST MENS + '
1070                                 ER CLERICAL PERS COST MENS
1080     *
1090     *
1100     ***** APPROVAL LEVEL PERSONNEL  *****
1110     *
1120         AL SENIOR EXEC PERS MENS = 0
1130         AL EXEC PERS MENS = 0
1140         AL MGT PERS MENS = 0
1150         AL TECH PERS MENS = 0
1160         AL CLERICAL PERS MENS = 0
1170     *
1180         AL SENIOR EXEC PERS COST MENS = AL SENIOR EXEC PERS MENS * SENIOR EXEC SALARY
1190         AL EXEC PERS COST MENS = AL EXEC PERS MENS * EXEC SALARY
1200         AL MGT PERS COST MENS = AL MGT PERS MENS * MGT SALARY
1210        AL TECH PERS COST MENS = AL TECH PERS MENS * TECH SALARY
1220        AL CLERICAL PERS COST MENS = AL CLERICAL PERS MENS * CLERICAL SALARY
1230     *
1240        TOTAL AL PERS COST MENS = AL SENIOR EXEC PERS COST MENS + AL EXEC PERS COST MENS '
1250                                + AL MGT PERS COST MENS + AL TECH PERS COST MENS + '
1260                                AL CLERICAL PERS COST MENS
1270     *
1280     *
1290     ***** ACQUISITION PROCESSING PERSONNEL  *****
1300     *
1310        AP SENIOR EXEC PERS MENS = 0
1320        AP EXEC PERS MENS = 0
1330        AP MGT PERS MENS = 0
1340        AP TECH PERS MENS = 0
1350        AP CLERICAL PERS MENS = 0
1360     *
1370        AP SENIOR EXEC PERS COST MENS = AP SENIOR EXEC PERS MENS * SENIOR EXEC SALARY
1380        AP EXEC PERS COST MENS = AP EXEC PERS MENS * EXEC SALARY
1390        AP MGT PERS COST MENS = AP MGT PERS MENS * MGT SALARY
1400        AP TECH PERS COST MENS = AP TECH PERS MENS * TECH SALARY
1410        AP CLERICAL PERS COST MENS = AP CLERICAL PERS MENS * CLERICAL SALARY
1420     *
1430        TOTAL AP PERS COST MENS = AP SENIOR EXEC PERS COST MENS + AP EXEC PERS COST MENS '
```

```
1440                         + AP MGT PERS COST MENS + AP TECH PERS COST MENS + '
1450                        AP CLERICAL PERS COST MENS
1460    *
1470    *
1480           TOTAL PROJECT PERS COST MENS = TOTAL PO PERS COST MENS + TOTAL OS PERS COST MENS '
1490                                          + TOTAL SA PERS COST MENS + TOTAL ER PERS COST MENS '
1500                                          + TOTAL AL PERS COST MENS + TOTAL AP PERS COST MENS
1510    *
1520    *
1530    *
1540    ***************  CONTRACTOR SUPPORT COSTS  ***************
1550    *
1560    *
1570    *****  MANAGEMENT SUPPORT *****
1580    *
1590        PROGRAM MGT SUPPORT MENS = 0
1600        MS OTHER MENS = 0
1610    *
1620           TOTAL MGT SUPPORT COSTS MENS = PROGRAM MGT SUPPORT MENS + MS OTHER MENS
1630    *
1640    *
1650    *****  STUDIES AND ANALYSIS *****
1660    *
1670        POA&M ANALYSIS MENS = 0
1680        ECONOMIC ANALYSIS MENS = 0
1690        SA OTHER MENS = 0
1700    *
1710           TOTAL STUDIES AND ANALYSIS MENS = POA&M ANALYSIS MENS + ECONOMIC ANALYSIS MENS '
1720                                             + SA OTHER MENS
1730    *
1740    *
1750    ***** DESIGN AND DEVELOPMENT *****
1760    *
1770    *
1780    *****  ENGINEERING SERVICES  *****
1790    *
1800    *
1810    *****  TESTING  *****
1820    *
1830    *
1840             TOTAL CONTRACTOR SUPPORT COSTS MENS = TOTAL MGT SUPPORT COSTS MENS + TOTAL STUDIES AND ANALYSIS MENS
1850    *
1860    *
1870    *
1880    ***************  OTHER AGENCY/DEPARTMENT SUPPORT ***************
1890    *
1900    *
1910        PROJECT SUPPORT SERVICES MENS = 0
1920        STUDIES AND ANALYSIS MENS = 0
1930        DESIGN SERVICES MENS = 0
1940        ENGINEERING SERVICES MENS = 0
1950        FACILITIES SERVICES MENS = 0
1960    *
1970           TOTAL OTHER AGENCY OR DEPARTMENT SUPPORT MENS = PROJECT SUPPORT SERVICES MENS + '
1980                                         STUDIES AND ANALYSIS MENS + DESIGN SERVICES MENS '
1990                                         + ENGINEERING SERVICES MENS + FACILITIES SERVICES MENS
2000    *
2010    *
2020    *
2030    ***************  MATERIAL AND EQUIPMENT  ***************
2040    *
2050    *
2060        OFFICE EQUIPMENT MENS = 0
2070        OFFICE SUPPLIES MENS = 0
2080        COMPUTER EQUIPMENT MENS = 0
2090        COMPUTER SUPPLIES MENS = 0
2100        COMPUTER SOFTWARE MENS = 0
2110        M&E OTHER MENS = 0
2120    *
2130           TOTAL MATERIAL AND EQUIPMENT MENS = OFFICE EQUIPMENT MENS + OFFICE SUPPLIES MENS '
2140                                               + COMPUTER EQUIPMENT MENS + COMPUTER SUPPLIES MENS '
2150                                               + COMPUTER SOFTWARE MENS + M&E OTHER MENS
```

```
FILE: FILET    IFPS     A1  NAVAL POSTGRADUATE SCHOOL                                        PAGE 004

2160    *
2170    *
2180    *
2190    ****************  OTHER DIRECT COSTS  ****************
2200    *
2210    *
2220        TRAVEL MENS = 0
2230        UTILITIES MENS = 0
2240        PRINTING & REPRODUCTION MENS = 0
2250        OFFICE EQUIPMENT RENTAL MENS = 0
2260        FACILITY RENTAL & MODIFICATION MENS = 0
2270        TRAINING MENS = 0
2280        SITE PREPARATION MENS = 0
2290        OTHER EQUIPMENT RENTAL MENS = 0
2300        MAINTENANCE MENS = 0
2310        MISCELLANEOUS MENS = 0
2320    *
2330          TOTAL OTHER DIRECT COSTS MENS = TRAVEL MENS + UTILITIES MENS + PRINTING & REPRODUCTION MENS '
2340                                          + OFFICE EQUIPMENT RENTAL MENS + FACILITY RENTAL & MODIFICATION MENS '
2350                                          + TRAINING MENS + SITE PREPARATION MENS + OTHER EQUIPMENT RENTAL MENS '
2360                                          + MAINTENANCE MENS + MISCELLANEOUS MENS
2370    *
2380    *
2390    *
2400             TOTAL MENS COST = TOTAL PROJECT PERS COST MENS + TOTAL CONTRACTOR SUPPORT COSTS MENS '
2410                             + TOTAL OTHER AGENCY OR DEPARTMENT SUPPORT MENS '
2420                             + TOTAL MATERIAL AND EQUIPMENT MENS + TOTAL OTHER DIRECT COSTS MENS
2430    *
2440    *
2450    *
2460    ***********************************************************************************************
2470    ***************************************************  SDP1 COST MODULE  **************************************************
2480    *
2490    *
2500    ****************  PERSONNEL COSTS  ****************
2510    *
2520    *
2530    *****  PROJECT OFFICE PERSONNEL  *****
2540    *
2550        PO SENIOR EXEC PERS SDP1 = 0
2560        PO EXEC PERS SDP1 = 0
2570        PO MGT PERS SDP1 = 0
2580        PO TECH PERS SDP1 = 0
2590        PO CLERICAL PERS SDP1 = 0
2600    *
2610        PO SENIOR EXEC PERS COST SDP1 = PO SENIOR EXEC PERS SDP1 * SENIOR EXEC SALARY
2620        PO EXEC PERS COST SDP1 = PO EXEC PERS SDP1 * EXEC SALARY
2630        PO MGT PERS COST SDP1 = PO MGT PERS SDP1 * MGT SALARY
2640        PO TECH PERS COST SDP1 = PO TECH PERS SDP1 * TECH SALARY
2650        PO CLERICAL PERS COST SDP1 = PO CLERICAL PERS SDP1 * CLERICAL SALARY
2660    *
2670        TOTAL PO PERS COST SDP1 = PO SENIOR EXEC PERS COST SDP1 + PO EXEC PERS COST SDP1 + PO MGT PERS COST SDP1 + '
2680                                  PO TECH PERS COST SDP1 + PO CLERICAL PERS COST SDP1
2690    *
2700    *
2710    *****  ORGANIZATIONAL SUPPORT PERSONNEL  *****
2720    *
2730        OS SENIOR EXEC PERS SDP1 = 0
2740        OS EXEC PERS SDP1 = 0
2750        OS MGT PERS SDP1 = 0
2760        OS TECH PERS SDP1 = 0
2770        OS CLERICAL PERS SDP1 = 0
2780    *
2790        OS SENIOR EXEC PERS COST SDP1 = OS SENIOR EXEC PERS SDP1 * SENIOR EXEC SALARY
2800        OS EXEC PERS COST SDP1 = OS EXEC PERS SDP1 * EXEC SALARY
2810        OS MGT PERS COST SDP1 = OS MGT PERS SDP1 * MGT SALARY
2820        OS TECH PERS COST SDP1 = OS TECH PERS SDP1 * TECH SALARY
2830        OS CLERICAL PERS COST SDP1 = OS CLERICAL PERS SDP1 * CLERICAL SALARY
2840    *
2850        TOTAL OS PERS COST SDP1 = OS SENIOR EXEC PERS COST SDP1 + OS EXEC PERS COST SDP1 + '
2860                                  OS MGT PERS COST SDP1 + OS TECH PERS COST SDP1 + OS CLERICAL PERS COST SDP1
2870    *
```

```
2880     *
2890     *****  SUPPORT ACTIVITY PERSONNEL  *****
2900     *
2910         SA SENIOR EXEC PERS SDP1 = 0
2920         SA EXEC PERS SDP1 = 0
2930         SA MGT PERS SDP1 = 0
2940         SA TECH PERS SDP1 = 0
2950         SA CLERICAL PERS SDP1 = 0
2960     *
2970         SA SENIOR EXEC PERS COST SDP1 = SA SENIOR EXEC PERS SDP1 * SENIOR EXEC SALARY
2980         SA EXEC PERS COST SDP1 = SA EXEC PERS SDP1 * EXEC SALARY
2990         SA MGT PERS COST SDP1 = SA MGT PERS SDP1 * MGT SALARY
3000         SA TECH PERS COST SDP1 = SA TECH PERS SDP1 * TECH SALARY
3010         SA CLERICAL PERS COST SDP1 = SA CLERICAL PERS SDP1 * CLERICAL SALARY
3020     *
3030         TOTAL SA PERS COST SDP1 = SA SENIOR EXEC PERS COST SDP1 + SA EXEC PERS COST SDP1 '
3040                                   + SA MGT PERS COST SDP1 + SA TECH PERS COST SDP1 + '
3050                                   SA CLERICAL PERS COST SDP1
3060     *
3070     *
3080     *****  EXECUTIVE REVIEW PERSONNEL *****
3090     *
3100         ER SENIOR EXEC PERS SDP1 = 0
3110         ER EXEC PERS SDP1 = 0
3120         ER MGT PERS SDP1 = 0
3130         ER TECH PERS SDP1 = 0
3140         ER CLERICAL PERS SDP1 = 0
3150     *
3160         ER SENIOR EXEC PERS COST SDP1 = ER SENIOR EXEC PERS SDP1 * SENIOR EXEC SALARY
3170         ER EXEC PERS COST SDP1 = ER EXEC PERS SDP1 * EXEC SALARY
3180         ER MGT PERS COST SDP1 = ER MGT PERS SDP1 * MGT SALARY
3190         ER TECH PERS COST SDP1 = ER TECH PERS SDP1 * TECH SALARY
3200         ER CLERICAL PERS COST SDP1 = ER CLERICAL PERS SDP1 * CLERICAL SALARY
3210     *
3220         TOTAL ER PERS COST SDP1 = ER SENIOR EXEC PERS COST SDP1 + ER EXEC PERS COST SDP1 '
3230                                   + ER MGT PERS COST SDP1 + ER TECH PERS COST SDP1 + '
3240                                   ER CLERICAL PERS COST SDP1
3250     *
3260     *
3270     *****  APPROVAL LEVEL PERSONNEL  *****
3280     *
3290         AL SENIOR EXEC PERS SDP1 = 0
3300         AL EXEC PERS SDP1 = 0
3310         AL MGT PERS SDP1 = 0
3320         AL TECH PERS SDP1 = 0
3330         AL CLERICAL PERS SDP1 = 0
3340     *
3350         AL SENIOR EXEC PERS COST SDP1 = AL SENIOR EXEC PERS SDP1 * SENIOR EXEC SALARY
3360         AL EXEC PERS COST SDP1 = AL EXEC PERS SDP1 * EXEC SALARY
3370         AL MGT PERS COST SDP1 = AL MGT PERS SDP1 * MGT SALARY
3380         AL TECH PERS COST SDP1 = AL TECH PERS SDP1 * TECH SALARY
3390         AL CLERICAL PERS COST SDP1 = AL CLERICAL PERS SDP1 * CLERICAL SALARY
3400     *
3410         TOTAL AL PERS COST SDP1 = AL SENIOR EXEC PERS COST SDP1 + AL EXEC PERS COST SDP1 '
3420                                   + AL MGT PERS COST SDP1 + AL TECH PERS COST SDP1 + '
3430                                   AL CLERICAL PERS COST SDP1
3440     *
3450     *
3460     *****  ACQUISITION PROCESSING PERSONNEL  *****
3470     *
3480         AP SENIOR EXEC PERS SDP1 = 0
3490         AP EXEC PERS SDP1 = 0
3500         AP MGT PERS SDP1 = 0
3510         AP TECH PERS SDP1 = 0
3520         AP CLERICAL PERS SDP1 = 0
3530     *
3540         AP SENIOR EXEC PERS COST SDP1 = AP SENIOR EXEC PERS SDP1 * SENIOR EXEC SALARY
3550         AP EXEC PERS COST SDP1 = AP EXEC PERS SDP1 * EXEC SALARY
3560         AP MGT PERS COST SDP1 = AP MGT PERS SDP1 * MGT SALARY
3570         AP TECH PERS COST SDP1 = AP TECH PERS SDP1 * TECH SALARY
3580         AP CLERICAL PERS COST SDP1 = AP CLERICAL PERS SDP1 * CLERICAL SALARY
3590     *
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3600        TOTAL AP PERS COST SCP1 = AP SENIOR EXEC PERS COST SDP1 + AP EXEC PERS COST SDP1 '
3610                                  + AP MGT PERS COST SDP1 + AP TECH PERS COST SDP1 + '
3620                                  AP CLERICAL PERS COST SDP1
3630    *
3640    *
3650            TOTAL PROJECT PERS CCST SDP1 = TOTAL PO PERS COST SOP1 + TOTAL OS PERS COST SDP1 '
3660                                           + TOTAL SA PERS COST SDP1 + TOTAL ER PERS COST SDP1 '
3670                                           + TOTAL AL PERS COST SOP1 + TOTAL AP PERS COST SDP1
3680    *
3690    *
3700    *
3710    ****************  CONTRACTCR SUPPORT COSTS  ****************
3720    *
3730    *
3740    *****  MANAGEMENT SUPPORT *****
3750    *
3760        PROGRAM MGT SUPPORT SDP1 = 0
3770        PERT CHART DEVELCPMENT SDP1 = 0
3780        POA&M MGT SUPPORT SDP1 = 0
3790        MS OTHER SDP1 = 0
3800    *
3810        TOTAL MGT SUPPORT COSTS SOP1 = PROGRAM MGT SUPPORT SDP1 + MS OTHER SDP1+ PERT CHART DEVELOPMENT SDP1 '
3820                                       + POA&M MGT SUPPORT SCP1
3830    *
3840    *
3850    *****  STUOIES AND ANALYSIS *****
3860    *
3870        CATA COMM PLAN STUDY SOP1 = 0
3880        ECONOMIC ANALYSIS SCPl = 0
3890        INTERIM CONVERSION STUDY SDP1 = 0
3900        TECHNOLOGY ANALYSIS SDP1 = 0
3910        SECURITY & PRIVACY STUDY SDP1 = 0
3920        BENCHMARK REQUIREMENTS STUDY SDP1 = 0
3930        SA OTHER SOP1 = 0
3940    *
3950        TOTAL STUDIES ANO ANALYSIS SOP1 = SECURITY & PRIVACY STUOY SDP1 + ECONOMIC ANALYSIS SOP1 '
3960                                          + SA OTHER SDP1+ INTERIM CONVERSION STUDY SOP1 '
3970                                          + TECHNOLOGY ANALYSIS SDP1+ BENCHMARK REQUIREMENTS STUOY SDP1 '
3980                                          + DATA COMM PLAN STUDY SDP1
3990    *
4000    *
4010    ***** OESIGN AND DEVELOPMENT *****
4020    *
4030        PRELIM ARCHITECTURAL STRATEGY SOP1 = 0
4040        D&D OTHER SDP1 = 0
4050    *
4060            TOTAL OESIGN AND DEVELOPMENT SDP1 = PRELIM ARCHITECTURAL STRATEGY SOP1 + O&D OTHER SDP1
4070    *
4080    *
4090    *****  ENGINEERING SERVICES  *****
4100    *
4110    *
4120    *****  TESTING  *****
4130    *
4140    *
4150            TOTAL CONTRACTOR SUPPORT COSTS SOP1 = TOTAL MGT SUPPCRT COSTS SDP1 + TOTAL STUOIES AND ANALYSIS SOP1
4160    *
4170    *
4180    *
4190    ****************  OTHER AGENCY/DEPARTMENT SUPPORT ****************
4200    *
4210    *
4220        PROJECT SUPPORT SERVICES SOP1 = 0
4230        STUOIES AND ANALYSIS SDP1 = 0
4240        DESIGN SERVICES SOP1 = 0
4250        ENGINEERING SERVICES SDP1 = 0
4260        FACILITIES SERVICES SDP1 = 0
4270    *
4280            TOTAL OTHER AGENCY OR DEPARTMENT SUPPORT SOP1 = PROJECT SUPPORT SERVICES SDP1 + '
4290                                            STUDIES ANO ANALYSIS SOP1 + DESIGN SERVICES SDP1 '
4300                                            + ENGINEERING SERVICES SDP1 + FACILITIES SERVICES SDP1
4310    *
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4320    *
4330    *
4340    ****************  MATERIAL AND EQUIPMENT  ****************
4350    *
4360    *
4370        OFFICE EQUIPMENT SDP1 = 0
4380        OFFICE SUPPLIES SDP1 = 0
4390        COMPUTER EQUIPMENT SDP1 = 0
4400        COMPUTER SUPPLIES SDP1 = 0
4410        COMPUTER SOFTWARE SDP1 = 0
4420        M&E OTHER SDP1 = 0
4430    *
4440            TOTAL MATERIAL AND EQUIPMENT SDP1 = OFFICE EQUIPMENT SDP1 + OFFICE SUPPLIES SDP1 ,
4450                                              + COMPUTER EQUIPMENT SDP1 + COMPUTER SUPPLIES SDP1 ,
4460                                              + COMPUTER SOFTWARE SDP1 + M&E OTHER SDP1
4470    *
4480    *
4490    *
4500    ****************  OTHER DIRECT COSTS  ****************
4510    *
4520    *
4530        TRAVEL SDP1 = 0
4540        UTILITIES SDP1 = 0
4550        PRINTING & REPRODUCTION SDP1 = 0
4560        OFFICE EQUIPMENT RENTAL SDP1 = 0
4570        FACILITY RENTAL & MODIFICATION SDP1 = 0
4580        TRAINING SDP1 = 0
4590        SITE PREPARATION SDP1 = 0
4600        OTHER EQUIPMENT RENTAL SDP1 = 0
4610        MAINTENANCE SDP1 = 0
4620        MISCELLANEOUS SDP1 = 0
4630    *
4640            TOTAL OTHER DIRECT COSTS SDP1 = TRAVEL SDP1 + UTILITIES SDP1 + PRINTING & REPRODUCTION SDP1 ,
4650                                           + OFFICE EQUIPMENT RENTAL SDP1 + FACILITY RENTAL & MODIFICATION SDP1 ,
4660                                           + TRAINING SDP1 + SITE PREPARATION SDP1 + OTHER EQUIPMENT RENTAL SDP1 ,
4670                                           + MAINTENANCE SDP1 + MISCELLANEOUS SDP1
4680    *
4690    *
4700    *
4710                TOTAL SDP1 COST = TOTAL PROJECT PERS COST SDP1 + TOTAL CONTRACTOR SUPPORT COSTS SDP1 ,
4720                                  + TOTAL OTHER AGENCY OR DEPARTMENT SUPPORT SDP1 ,
4730                                  + TOTAL MATERIAL AND EQUIPMENT SDP1 + TOTAL OTHER DIRECT COSTS SDP1
4740    *
4750    *
4760    *
4770    *
4780    *
4790    *
4800    *******************************************************************************************************************
4810    ***************************************************  SDP2 COST MODULE  *********************************************
4820    *
4830    *
4840    ****************  PERSONNEL COSTS  ****************
4850    *
4860    *
4870    *****  PROJECT OFFICE PERSONNEL  *****
4880    *
4890        PO SENIOR EXEC PERS SDP2 = 0
4900        PO EXEC PERS SDP2 = 0
4910        PO MGT PERS SDP2 = 0
4920        PO TECH PERS SDP2 = 0
4930        PO CLERICAL PERS SDP2 = 0
4940     *
4950        PO SENIOR EXEC PERS COST SDP2 = PO SENIOR EXEC PERS SDP2 * SENIOR EXEC SALARY
4960        PO EXEC PERS COST SDP2 = PO EXEC PERS SDP2 * EXEC SALARY
4970        PO MGT PERS COST SDP2 = PO MGT PERS SDP2 * MGT SALARY
4980        PO TECH PERS COST SDP2 = PO TECH PERS SDP2 * TECH SALARY
4990        PO CLERICAL PERS COST SDP2 = PO CLERICAL PERS SDP2 * CLERICAL SALARY
5000     *
5010        TOTAL PO PERS COST SDP2 = PO SENIOR EXEC PERS COST SDP2 + PO EXEC PERS COST SDP2 + PO MGT PERS COST SDP2 + ,
5020                                  PO TECH PERS COST SDP2 + PO CLERICAL PERS COST SDP2
5030     *
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5040        *
5050        *****  ORGANIZATIONAL SUPPORT PERSONNEL  *****
5060        *
5070           CS SENIOR EXEC PERS SCP2 = 0
5080           OS EXEC PERS SDP2 = 0
5090           CS MGT PERS SOP2 = 0
510C           OS TECH PERS SOP2 = C
5110           GS CLERICAL PERS SDP2 = 0
5120        *
5130           CS SENIOR EXEC PERS COST SDP2 = OS SENIOR EXEC PERS SDP2 * SENIOR EXEC SALARY
5140           CS EXEC PERS COST SOP2 = OS EXEC PERS SDP2 * EXEC SALARY
515C           CS MGT PERS COST SDP2 = CS MGT PERS SDP2 * MGT SALARY
5160           OS TECH PERS COST SOP2 = OS TECH PERS SOP2 * TECH SALARY
5170           OS CLERICAL PERS COST SDP2 = OS CLERICAL PERS SOP2 * CLERICAL SALARY
5180        *
5190           TOTAL OS PERS COST SCP2 = OS SENIOR EXEC PERS COST SOP2 + OS EXEC PERS COST SDP2 + '
5200                                     OS MGT PERS COST SDP2 + OS TECH PERS COST SDP2 + OS CLERICAL PERS COST SDP2
5210        *
5220        *
5230        *****  SUPPORT ACTIVITY PERSONNEL  *****
5240        *
5250           SA SENIOR EXEC PERS SDP2 = 0
5260           SA EXEC PERS SDP2 = 0
5270           SA MGT PERS SOP2 = 0
5280           SA TECH PERS SDP2 = 0
5290           SA CLERICAL PERS SDP2 = 0
5300        *
5310           SA SENIOR EXEC PERS COST SOP2 = SA SENIOR EXEC PERS SOP2 * SENIOR EXEC SALARY
5320           SA EXEC PERS COST SOF2 = SA EXEC PERS SDP2 * EXEC SALARY
5330           SA MGT PERS COST SDP2 = SA MGT PERS SDP2 * MGT SALARY
5340           SA TECH PERS COST SOF2 = SA TECH PERS SOP2 * TECH SALARY
5350           SA CLERICAL PERS COST SDP2 = SA CLERICAL PERS SOP2 * CLERICAL SALARY
5360        *
5370           TOTAL SA PERS COST SCP2 = SA SENIOR EXEC PERS COST SDP2 + SA EXEC PERS COST SDP2 '
5380                                     + SA MGT PERS COST SDP2 + SA TECH PERS COST SDP2 + '
5390                                     SA CLERICAL PERS COST SDP2
5400        *
5410        *
5420        *****  EXECUTIVE REVIEW PERSONNEL *****
5430        *
5440           ER SENIOR EXEC PERS SOP2 = 0
5450           ER EXEC PERS SDP2 = 0
5460           ER MGT PERS SOP2 = 0
5470           ER TECH PERS SDP2 = 0
5480           ER CLERICAL PERS SDP2 = 0
5490        *
5500           ER SENIOR EXEC PERS COST SDP2 = ER SENIOR EXEC PERS SDP2 * SENIOR EXEC SALARY
5510           ER EXEC PERS COST SOF2 = ER EXEC PERS SOP2 * EXEC SALARY
5520           ER MGT PERS COST SOP2 = ER MGT PERS SDP2 * MGT SALARY
5530           ER TECH PERS COST SOF2 = ER TECH PERS SDP2 * TECH SALARY
5540           ER CLERICAL PERS COST SDP2 = ER CLERICAL PERS SDP2 * CLERICAL SALARY
5550        *
5560           TOTAL ER PERS COST SCP2 = ER SENIOR EXEC PERS COST SCP2 + ER EXEC PERS COST SDP2 '
5570                                     + ER MGT PERS COST SOP2 + ER TECH PERS COST SDP2 + '
5580                                     ER CLERICAL PERS COST SDP2
5590        *
5600        *
5610        *****  APPROVAL LEVEL PERSONNEL  *****
5620        *
5630           AL SENIOR EXEC PERS SOP2 = 0
5640           AL EXEC PERS SDP2 = 0
5650           AL MGT PERS SDP2 = 0
5660           AL TECH PERS SOP2 = 0
5670           AL CLERICAL PERS SDP2 = 0
5680        *
5690           AL SENIOR EXEC PERS COST SDP2 = AL SENIOR EXEC PERS SOP2 * SENIOR EXEC SALARY
5700           AL EXEC PERS COST SDP2 = AL EXEC PERS SOP2 * EXEC SALARY
5710           AL MGT PERS COST SOP2 = AL MGT PERS SOP2 * MGT SALARY
5720           AL TECH PERS COST SOP2 = AL TECH PERS SDP2 * TECH SALARY
5730           AL CLERICAL PERS COST SDP2 = AL CLERICAL PERS SOP2 * CLERICAL SALARY
5740        *
5750           TCTAL AL PERS COST SCP2 = AL SENIOR EXEC PERS COST SCP2 + AL EXEC PERS COST SDP2 '
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5760                                  + AL MGT PERS COST SDP2 + AL TECH PERS COST SDP2 + '
5770                                  AL CLERICAL PERS COST SDP2
5780    *
5790    *
5800    ***** ACQUISITION PROCESSING PERSONNEL *****
5810    *
5820        AP SENIOR EXEC PERS SDP2 = 0
5830        AP EXEC PERS SDP2 = 0
5840        AP MGT PERS SDP2 = 0
5850        AP TECH PERS SDP2 = 0
5860        AP CLERICAL PERS SDP2 = 0
5870    *
5880        AP SENIOR EXEC PERS COST SDP2 = AP SENIOR EXEC PERS SDP2 * SENIOR EXEC SALARY
5890        AP EXEC PERS COST SDP2 = AP EXEC PERS SDP2 * EXEC SALARY
5900        AP MGT PERS COST SDP2 = AP MGT PERS SDP2 * MGT SALARY
5910        AP TECH PERS COST SDP2 = AP TECH PERS SDP2 * TECH SALARY
5920        AP CLERICAL PERS COST SDP2 = AP CLERICAL PERS SDP2 * CLERICAL SALARY
5930    *
5940        TOTAL AP PERS COST SDP2 = AP SENIOR EXEC PERS COST SDP2 + AP EXEC PERS COST SDP2 '
5950                                  + AP MGT PERS COST SDP2 + AP TECH PERS COST SDP2 + '
5960                                  AP CLERICAL PERS COST SDP2
5970    *
5980    *
5990            TOTAL PROJECT PERS COST SDP2 = TOTAL PO PERS COST SDP2 + TOTAL OS PERS COST SDP2 '
6000                                           + TOTAL SA PERS COST SDP2 + TOTAL ER PERS COST SDP2 '
6010                                           + TOTAL AL PERS COST SDP2 + TOTAL AP PERS COST SDP2
6020    *
6030    *
6040    *
6050    ***************  CONTRACTOR SUPPORT COSTS  ***************
6060    *
6070    *
6080    ***** MANAGEMENT SUPPORT *****
6090    *
6100        PROGRAM MGT SUPPORT SDP2 = 0
6110        DOCUMENTATION MGT SUPPORT SDP2 = 0
6120        MS OTHER SDP2 = 0
6130    *
6140            TOTAL MGT SUPPORT COSTS SDP2 = PROGRAM MGT SUPPORT SDP2 + MS OTHER SDP2 '
6150                                           + DOCUMENTATION MGT SUPPORT SDP2
6160    *
6170    *
6180    ***** STUDIES AND ANALYSIS *****
6190    *
6200        CONFIGURATION MGT STUDY SDP2 = 0
6210        ECONOMIC ANALYSIS SDP2 = 0
6220        LOGISTICS STUDY SDP2 = 0
6230        TECHNOLOGY ANALYSIS SDP2 = 0
6240        SECURITY & PRIVACY STUDY SDP2 = 0
6250        TRAINING REQUIREMENTS STUDY SDP2 = 0
6260        STANDARDIZATION STUDY SDP2 = 0
6270        INTEROPERABILITY ANALYSIS SDP2 = 0
6280        TEST & EVAL RQMTS STUDY SDP2 = 0
6290        SA OTHER SDP2 = 0
6300    *
6310            TOTAL STUDIES AND ANALYSIS SDP2 = SECURITY & PRIVACY STUDY SDP2 + ECONOMIC ANALYSIS SDP2 '
6320                                              + SA OTHER SDP2 + TEST & EVAL RQMTS STUDY SDP2 '
6330                                              + TECHNOLOGY ANALYSIS SDP2 + INTEROPERABILITY ANALYSIS SDP2 '
6340                                              + STANDARDIZATION STUDY SDP2 + LOGISTICS STUDY SDP2 '
6350                                              + TRAINING REQUIREMENTS STUDY SDP2 + CONFIGURATION MGT STUDY SDP2
6360    *
6370    *
6380    ***** DESIGN AND DEVELOPMENT *****
6390    *
6400        ARCHITECTURAL STRATEGY PLAN SDP2 = 0
6410        CONVERSION PLAN SDP2 = 0
6420        DATABASE DESIGN SDP2 = 0
6430        PHYSICAL SYS DESIGN SDP2 = 0
6440        DATA COMM PLAN SDP2 = 0
6450        HW & SW MAINTENANCE PLAN SDP2 = 0
6460        FACILITIES UPGRADE PLAN SDP2 = 0
6470        BENCHMARK PLAN SDP2 = 0
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6480        D&D OTHER SDP2 = 0
6490    *
6500        TOTAL DESIGN AND DEVELOPMENT SDP2 = ARCHITECTURAL STRATEGY PLAN SDP2 + D&D OTHER SDP2 '
6510                                            + CONVERSION PLAN SDP2 + DATABASE DESIGN SDP2 '
6520                                            + PHYSICAL SYS DESIGN SDP2 + DATA COMM PLAN SDP2 '
6530                                            + HW & SW MAINTENANCE PLAN SDP2 + BENCHMARK PLAN SDP2 '
6540                                            + FACILITIES UPGRADE PLAN SDP2
6550    *
6560    *
6570    *****  ENGINEERING SERVICES  *****
6580    *
6590    *
6600    *****  TESTING  *****
6610    *
6620    *
6630              TOTAL CONTRACTOR SUPPORT COSTS SDP2 = TOTAL MGT SUPPORT COSTS SDP2 + TOTAL STUDIES AND ANALYSIS SDP2
6640    *
6650    *
6660    *
6670    ****************  OTHER AGENCY/DEPARTMENT SUPPORT ****************
6680    *
6690    *
6700        PROJECT SUPPORT SERVICES SDP2 = 0
6710        STUDIES AND ANALYSIS SDP2 = 0
6720        DESIGN SERVICES SDP2 = 0
6730        ENGINEERING SERVICES SDP2 = 0
6740        FACILITIES SERVICES SDP2 = 0
6750    *
6760            TOTAL OTHER AGENCY OR DEPARTMENT SUPPORT SDP2 = PROJECT SUPPORT SERVICES SDP2 + '
6770                                         STUDIES AND ANALYSIS SDP2 + DESIGN SERVICES SDP2 '
6780                                         + ENGINEERING SERVICES SDP2 + FACILITIES SERVICES SDP2
6790    *
6800    *
6810    *
6820    ****************  MATERIAL AND EQUIPMENT  ****************
6830    *
6840    *
6850        OFFICE EQUIPMENT SDP2 = 0
6860        OFFICE SUPPLIES SDP2 = 0
6870        COMPUTER EQUIPMENT SDP2 = 0
6880        COMPUTER SUPPLIES SDP2 = 0
6890        COMPUTER SOFTWARE SDP2 = 0
6900        M&E OTHER SDP2 = 0
6910    *
6920            TOTAL MATERIAL AND EQUIPMENT SDP2 = OFFICE EQUIPMENT SDP2 + OFFICE SUPPLIES SDP2 '
6930                                                + COMPUTER EQUIPMENT SDP2 + COMPUTER SUPPLIES SDP2 '
6940                                                + COMPUTER SOFTWARE SDP2 + M&E OTHER SDP2
6950    *
6960    *
6970    *
6980    ****************  OTHER DIRECT COSTS  ****************
6990    *
7000    *
7010        TRAVEL SDP2 = 0
7020        UTILITIES SDP2 = 0
7030        PRINTING & REPRODUCTION SDP2 = 0
7040        OFFICE EQUIPMENT RENTAL SDP2 = 0
7050        FACILITY RENTAL & MODIFICATION SDP2 = 0
7060        TRAINING SDP2 = 0
7070        SITE PREPARATION SDP2 = 0
7080        OTHER EQUIPMENT RENTAL SDP2 = 0
7090        MAINTENANCE SDP2 = 0
7100        MISCELLANEOUS SDP2 = 0
7110    *
7120            TOTAL OTHER DIRECT COSTS SDP2 = TRAVEL SDP2 + UTILITIES SDP2 + PRINTING & REPRODUCTION SDP2 '
7130                                            + OFFICE EQUIPMENT RENTAL SDP2 + FACILITY RENTAL & MODIFICATION SDP2 '
7140                                            + TRAINING SDP2 + SITE PREPARATION SDP2 + OTHER EQUIPMENT RENTAL SDP2 '
7150                                            + MAINTENANCE SDP2 + MISCELLANEOUS SDP2
7160    *
7170    *
7180    *
7190              TOTAL SDP2 COST = TOTAL PROJECT PERS COST SDP2 + TOTAL CONTRACTOR SUPPORT COSTS SDP2 '
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7200                             + TOTAL OTHER AGENCY OR DEPARTMENT SUPPORT SOP2 '
7210                             + TOTAL MATERIAL AND EQUIPMENT SOP2 + TOTAL OTHER DIRECT COSTS SOP2
7220    *
7230    *
7240    *
7250    ************************************************************************************************
7260    ****************************************************  SOP3 COST MODULE  ************************
7270    *
7280    *
7290    ***************  PERSONNEL COSTS  ***************
7300    *
7310    *
7320    *****  PROJECT OFFICE PERSONNEL  *****
7330    *
7340      PO SENIOR EXEC PERS SOP3 = 0
7350      FO EXEC PERS SOP3 = 0
7360      PO MGT PERS SOP3 = 0
7370      FO TECH PERS SDP3 = 0
7380      FC CLERICAL PERS SOP3 = 0
7390    *
7400      FO SENIOR EXEC PERS COST SOP3 = PO SENIOR EXEC PERS SOP3 * SENIOR EXEC SALARY
7410      PO EXEC PERS COST SOF3 = PO EXEC PERS SDP3 * EXEC SALARY
7420      PO MGT PERS COST SOP3 = PO MGT PERS SDP3 * MGT SALARY
7430      PO TECH PERS COST SDP3 = PO TECH PERS SOP3 * TECH SALARY
7440      PO CLERICAL PERS COST SOP3 = PO CLERICAL PERS SOP3 * CLERICAL SALARY
7450    *
7460      TOTAL PO PERS COST SCP3 = PO SENIOR EXEC PERS COST SCP3 + PO EXEC PERS COST SOP3 + PC MGT PERS COST SDP3 + '
7470                                PO TECH PERS COST SUP3 + PO CLERICAL PERS COST SDP3
7480    *
7490    *
7500    *****  ORGANIZATIONAL SUPPORT PERSONNEL  *****
7510    *
7520      CS SENIOR EXEC PERS SDP3 = 0
7530      CS EXEC PERS SDP3 = 0
7540      CS MGT PERS SDP3 = 0
755C      CS TECH PERS SOP3 = C
7560      CS CLERICAL PERS SOP3 = 0
7570    *
7580      OS SENIOR EXEC PERS COST SOP3 = OS SENIOR EXEC PERS SDP3 * SENIOR EXEC SALARY
7590      CS EXEC PERS COST SDP3 = OS EXEC PERS SDP3 * EXEC SALARY
7600      OS MGT PERS COST SOP3 = CS MGT PERS SOP3 * MGT SALARY
7610      OS TECH PERS COST SDP3 = OS TECH PERS SOP3 * TECH SALARY
7620      OS CLERICAL PERS COST SOP3 = OS CLERICAL PERS SOP3 * CLERICAL SALARY
7630    *
7640      TOTAL OS PERS COST SCP3 = OS SENIOR EXEC PERS COST SDP3 + OS EXEC PERS COST SDP3 + '
7650                                OS MGT PERS COST SDP3 + OS TECH PERS COST SDP3 + OS CLERICAL PERS COST SOP3
7660    *
7670    *
7680    *****  SUPPORT ACTIVITY PERSONNEL  *****
7690    *
7700      SA SENIOR EXEC PERS SDP3 = 0
7710      SA EXEC PERS SOP3 = 0
7720      SA MGT PERS SOP3 = 0
7730      SA TECH PERS SOP3 = 0
7740      SA CLERICAL PERS SOP3 = 0
7750    *
7760      SA SENIOR EXEC PERS COST SOP3 = SA SENIOR EXEC PERS SDP3 * SENIOR EXEC SALARY
7770      SA EXEC PERS COST SOP3 = SA EXEC PERS SOP3 * EXEC SALARY
7780      SA MGT PERS COST SOP3 = SA MGT PERS SDP3 * MGT SALARY
7790      SA TECH PERS COST SCF3 = SA TECH PERS SOP3 * TECH SALARY
7800      SA CLERICAL PERS COST SDP3 = SA CLERICAL PERS SDP3 * CLERICAL SALARY
7810    *
7820      TOTAL SA PERS COST SCP3 = SA SENIOR EXEC PERS COST SCP3 + SA EXEC PERS COST SDP3 '
7830                                + SA MGT PERS COST SOP3 + SA TECH PERS COST SOP3 + '
7840                                SA CLERICAL PERS COST SDP3
7850    *
7860    *
7870    *****  EXECUTIVE REVIEW PERSONNEL  *****
7880    *
7890      ER SENIOR EXEC PERS SOP3 = 0
7900      ER EXEC PERS SOP3 = 0
7910      ER MGT PERS SOP3 = 0
```

```
7920          ER TECH PERS SDP3 = 0
7930          ER CLERICAL PERS SDP3 = 0
7940      *
7950          ER SENIOR EXEC PERS COST SDP3 = ER SENIOR EXEC PERS SDP3 * SENIOR EXEC SALARY
7960          ER EXEC PERS COST SDP3 = ER EXEC PERS SDP3 * EXEC SALARY
7970          ER MGT PERS COST SDP3 = ER MGT PERS SDP3 * MGT SALARY
7980          ER TECH PERS COST SDP3 = ER TECH PERS SDP3 * TECH SALARY
7990          ER CLERICAL PERS COST SDP3 = ER CLERICAL PERS SDP3 * CLERICAL SALARY
8000      *
8010          TOTAL ER PERS COST SDP3 = ER SENIOR EXEC PERS COST SDP3 + ER EXEC PERS COST SDP3 '
8020                                    + ER MGT PERS COST SDP3 + ER TECH PERS COST SDP3 + '
8030                                    ER CLERICAL PERS COST SDP3
8040      *
8050      *
8060      *****  APPROVAL LEVEL PERSONNEL  *****
8070      *
8080          AL SENIOR EXEC PERS SDP3 = 0
8090          AL EXEC PERS SDP3 = 0
8100          AL MGT PERS SDP3 = 0
8110          AL TECH PERS SDP3 = 0
8120          AL CLERICAL PERS SDP3 = 0
8130      *
8140          AL SENIOR EXEC PERS COST SDP3 = AL SENIOR EXEC PERS SDP3 * SENIOR EXEC SALARY
8150          AL EXEC PERS COST SDP3 = AL EXEC PERS SDP3 * EXEC SALARY
8160          AL MGT PERS COST SDP3 = AL MGT PERS SDP3 * MGT SALARY
8170          AL TECH PERS COST SDP3 = AL TECH PERS SDP3 * TECH SALARY
8180          AL CLERICAL PERS COST SDP3 = AL CLERICAL PERS SDP3 * CLERICAL SALARY
8190      *
8200          TOTAL AL PERS COST SDP3 = AL SENIOR EXEC PERS COST SDP3 + AL EXEC PERS COST SDP3 '
8210                                    + AL MGT PERS COST SDP3 + AL TECH PERS COST SDP3 + '
8220                                    AL CLERICAL PERS COST SDP3
8230     *
8240     *
8250     *****  ACQUISITION PROCESSING PERSONNEL  *****
8260     *
8270          AP SENIOR EXEC PERS SDP3 = 0
8280          AP EXEC PERS SDP3 = 0
8290          AP MGT PERS SDP3 = 0
8300          AP TECH PERS SDP3 = 0
8310          AP CLERICAL PERS SDP3 = 0
8320     *
8330          AP SENIOR EXEC PERS COST SDP3 = AP SENIOR EXEC PERS SDP3 * SENIOR EXEC SALARY
8340          AP EXEC PERS COST SDP3 = AP EXEC PERS SDP3 * EXEC SALARY
8350          AP MGT PERS COST SDP3 = AP MGT PERS SDP3 * MGT SALARY
8360          AP TECH PERS COST SDP3 = AP TECH PERS SDP3 * TECH SALARY
8370          AP CLERICAL PERS COST SDP3 = AP CLERICAL PERS SDP3 * CLERICAL SALARY
8380     *
8390          TOTAL AP PERS COST SDP3 = AP SENIOR EXEC PERS COST SDP3 + AP EXEC PERS COST SDP3 '
8400                                    + AP MGT PERS COST SDP3 + AP TECH PERS COST SDP3 + '
8410                                    AP CLERICAL PERS COST SDP3
8420     *
8430     *
8440             TOTAL PROJECT PERS COST SDP3 = TOTAL PO PERS COST SDP3 + TOTAL OS PERS COST SDP3 '
8450                                            + TOTAL SA PERS COST SDP3 + TOTAL ER PERS COST SDP3 '
8460                                            + TOTAL AL PERS COST SDP3 + TOTAL AP PERS COST SDP3
8470     *
8480     *
8490     *
8500     ****************  CONTRACTOR SUPPORT COSTS  ****************
8510     *
8520     *
8530     *****  MANAGEMENT SUPPORT *****
8540     *
8550          PROGRAM MGT SUPPORT SDP3 = 0
8560          DOCUMENTATION MGT SUPPORT SDP3 = 0
8570          INTEGRATION MGT SUPPORT SDP3 = 0
8580          MS OTHER SDP3 = 0
8590     *
8600          TOTAL MGT SUPPORT COSTS SDP3 = PROGRAM MGT SUPPORT SDP3 + MS OTHER SDP3 '
8610                                         + DOCUMENTATION MGT SUPPORT SDP3 + INTEGRATION MGT SUPPORT SDP3
8620     *
8630     *
```

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8640    *****  STUDIES AND ANALYSIS *****
8650    *
8660        CONFIGURATION MGT PLAN SDP3 = 0
8670        ECONOMIC ANALYSIS SDP3 = 0
8680        LOGISTICS PLAN SDP3 = 0
8690        SITE PREPARATION PLAN SDP3 = 0
8700        SECURITY & PRIVACY PLAN SDP3 = 0
8710        TRAINING PLAN SDP3 = 0
8720        STANDARDIZATION PLAN SDP3 = 0
8730        TEST & EVALUATION PLAN SDP3 = 0
8740        SA OTHER SDP3 = 0
8750    *
8760        TOTAL STUDIES AND ANALYSIS SDP3 = SECURITY & PRIVACY PLAN SDP3 + ECONOMIC ANALYSIS SDP3 '
8770                                          + SA OTHER SDP3 + TEST & EVALUATION PLAN SDP3 '
8780                                          + SITE PREPARATION PLAN SDP3 '
8790                                          + STANDARDIZATION PLAN SDP3 + LOGISTICS PLAN SDP3 '
8800                                          + TRAINING PLAN SDP3 + CONFIGURATION MGT PLAN SDP3
8810    *
8820    *
8830    ***** DESIGN AND DEVELOPMENT *****
8840    *
8850        HW & SW ACCEPTANCE TEST PLAN SDP3 = 0
8860        ARCHITECTURAL STRATEGY PLAN SDP3 = 0
8870        CONVERSION PLAN SDP3 = 0
8880        DATABASE DESIGN SDP3 = 0
8890        PHYSICAL SYS DESIGN SDP3 = 0
8900        DATA COMM PLAN SDP3 = 0
8910        HW & SW MAINTENANCE PLAN SDP3 = 0
8920        FACILITIES UPGRADE PLAN SDP3 = 0
8930        BENCHMARK PLAN SDP3 = 0
8940        D&D OTHER SDP3 = 0
8950    *
8960        TOTAL DESIGN AND DEVELOPMENT SDP3 = ARCHITECTURAL STRATEGY PLAN SDP3 + D&D OTHER SDP3 '
8970                                            + CONVERSION PLAN SDP3 + DATABASE DESIGN SDP3 '
8980                                            + PHYSICAL SYS DESIGN SDP3 + DATA COMM PLAN SDP3 '
8990                                            + HW & SW MAINTENANCE PLAN SDP3 + BENCHMARK PLAN SDP3 '
9000                                            + FACILITIES UPGRADE PLAN SDP3 + HW & SW ACCEPTANCE TEST PLAN SDP3
9010    *
9020    *
9030    *****  ENGINEERING SERVICES  *****
9040    *
9050        SW ENGINEERING SERVICES SDP3 = 0
9060        INSTALL PROTOTYPE HW & SW SDP3= 0
9070        ES OTHER SDP3 = 0
9080    *
9090        TOTAL ENGINEERING SERVICES SDP3 = SW ENGINEERING SERVICES SDP3 + INSTALL PROTOTYPE HW & SW SDP3 '
9100                                          + ES OTHER SDP3
9110    *
9120    *
9130    *****  TESTING/TRAINING  *****
9140    *
9150        VENDOR SW TRAINING SDP3 = 0
9160        T&T OTHER SDP3 = 0
9170    *
9180        TOTAL TESTING AND TRAINING SDP3 = VENDOR SW TRAINING SDP3 + T&T OTHER SDP3
9190    *
9200          TOTAL CONTRACTOR SUPPORT COSTS SDP3 = TOTAL MGT SUPPORT COSTS SDP3 + TOTAL STUDIES AND ANALYSIS SDP3 '
9210                                                + TOTAL DESIGN AND DEVELOPMENT SDP3 '
9220                                                + TOTAL ENGINEERING SERVICES SDP3 '
9230                                                + TOTAL TESTING AND TRAINING SDP3
9240    *
9250    *
9260    *
9270    *************** OTHER AGENCY/DEPARTMENT SUPPORT ***************
9280    *
9290    *
9300        PROJECT SUPPORT SERVICES SDP3 = 0
9310        STUDIES AND ANALYSIS SDP3 = 0
9320        DESIGN SERVICES SDP3 = 0
9330        ENGINEERING SERVICES SDP3 = 0
9340        FACILITIES SERVICES SDP3 = 0
9350    *
```

```
9360          TOTAL OTHER AGENCY OR DEPARTMENT SUPPORT SDP3 = PROJECT SUPPORT SERVICES SDP3 + '
9370                                               STUDIES AND ANALYSIS SDP3 + DESIGN SERVICES SDP3 '
9380                                               + ENGINEERING SERVICES SDP3 + FACILITIES SERVICES SDP3
9390     *
9400     *
9410     *
9420     ***************  MATERIAL AND EQUIPMENT  ***************
9430     *
9440     *
9450        OFFICE EQUIPMENT SDP3 = 0
9460        OFFICE SUPPLIES SDP3 = 0
9470        COMPUTER EQUIPMENT SDP3 = 0
9480        COMPUTER SUPPLIES SDP3 = 0
9490        COMPUTER SOFTWARE SDP3 = 0
9500        M&E OTHER SDP3 = 0
9510     *
9520          TOTAL MATERIAL AND EQUIPMENT SDP3 = OFFICE EQUIPMENT SDP3 + OFFICE SUPPLIES SDP3 '
9530                                              + COMPUTER EQUIPMENT SDP3 + COMPUTER SUPPLIES SDP3 '
9540                                              + COMPUTER SOFTWARE SDP3 + M&E OTHER SDP3
9550     *
9560     *
9570     *
9580     ***************  OTHER DIRECT COSTS  ***************
9590     *
9600     *
9610        TRAVEL SDP3 = 0
9620        UTILITIES SDP3 = 0
9630        PRINTING & REPRODUCTION SDP3 = 0
9640        OFFICE EQUIPMENT RENTAL SDP3 = 0
9650        FACILITY RENTAL & MODIFICATION SDP3 = 0
9660        TRAINING SDP3 = 0
9670        SITE PREPARATION SDP3 = 0
9680        OTHER EQUIPMENT RENTAL SDP3 = 0
9690        MAINTENANCE SDP3 = 0
9700        MISCELLANEOUS SDP3 = 0
9710     *
9720          TOTAL OTHER DIRECT COSTS SDP3 = TRAVEL SDP3 + UTILITIES SDP3 + PRINTING & REPRODUCTION SDP3 '
9730                                            + OFFICE EQUIPMENT RENTAL SDP3 + FACILITY RENTAL & MODIFICATION SDP3 '
9740                                            + TRAINING SDP3 + SITE PREPARATION SDP3 + OTHER EQUIPMENT RENTAL SDP3 '
9750                                            + MAINTENANCE SDP3 + MISCELLANEOUS SDP3
9760     *
9770     *
9780     *
9790            TOTAL SDP3 COST = TOTAL PROJECT PERS COST SDP3 + TOTAL CONTRACTOR SUPPORT COSTS SDP3 '
9800                              + TOTAL OTHER AGENCY OR DEPARTMENT SUPPORT SDP3 '
9810                              + TOTAL MATERIAL AND EQUIPMENT SDP3 + TOTAL OTHER DIRECT COSTS SDP3
9820     *
9830     *
9840     *
9850              TOTAL PROJECT COST = TOTAL MENS COST + TOTAL SDP1 COST + TOTAL SDP2 COST + TOTAL SDP3 COST
9860     *
9870     *
9880     *
9890     *
9900     *      ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
9910     *      ||                                                                                ||
9920     *      ||      THE FOLLOWING SECTION COMPUTES THE EFFECT OF LOST OPPORTUNITY COSTS.      ||
9930     *      ||      OPPORTUNITY COSTS ARE THE DISCOUNTED PROJECTED YEARLY COST SAVINGS       ||
9940     *      ||      ATTRIBUTED TO THE NEW SYSTEM.  THE PROJECTED COST SAVINGS STREAM IS      ||
9950     *      ||      DISCOUNTED BACK TO THE FOURTH PROJECT YEAR.  THIS IS TO PROVIDE A        ||
9960     *      ||      COMPARISON WITH THE PRIVATE SECTOR WHOSE ACQUISITION AND INSTALLATION    ||
9970     *      ||      TIME FOR NEW ADP SYSTEMS IS APPROXIMATELY THREE YEARS.                   ||
9980     *      ||                                                                                ||
9990     *      ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
10000     *
10010     *
10020     ***************  OPPORTUNITY COST COMPUTATION  ***************
10030     *
10040        YR COST SAVINGS START = 0
10050        FIRST YR COST SAVINGS = 0
10060        SECOND YR COST SAVINGS = 0
10070        THIRD YR COST SAVINGS = 0
```

```
     FOURTH YR COST SAVINGS = 0
     FIFTH YR COST SAVINGS = 0
     NEW SYSTEM DEPLOY YR = 0
     INTEREST RATE = .10
     MATURITY VALUE FACTOR1 = XPOWERY (COMPOUND FACTOR, NUMBER OF PERIODS)
     NUMBER OF PERIODS = YR COST SAVINGS START - NEW SYSTEM DEPLOY YR
     PRESENT VALUE FACTOR1 = 1/MATURITY VALUE FACTOR1
     COMPOUND FACTOR = 1 + INTEREST RATE
     MATURITY VALUE FACTOR2 = XPOWERY (COMPOUND FACTOR, NUMBER OF PERIODS - 1)
     PRESENT VALUE FACTOR2 = 1/MATURITY VALUE FACTOR2
     MATURITY VALUE FACTOR3 = XPOWERY (COMPOUND FACTOR, NUMBER OF PERIODS - 2)
     PRESENT VALUE FACTOR3 = 1/MATURITY VALUE FACTOR3
     MATURITY VALUE FACTOR4 = XPOWERY (COMPOUND FACTOR, NUMBER OF PERIODS - 3)
     PRESENT VALUE FACTOR4 = 1/MATURITY VALUE FACTOR4
     MATURITY VALUE FACTOR5 = XPOWERY (COMPOUND FACTOR, NUMBER OF PERIODS - 4)
     PRESENT VALUE FACTOR5 = 1/MATURITY VALUE FACTOR5
     ADJUSTED SAVINGS FIRST DEPLOY YR = FIRST YR COST SAVINGS * PRESENT VALUE FACTOR1
     ADJUSTED SAVINGS SECOND DEPLOY YR = SECOND YR COST SAVINGS * PRESENT VALUE FACTOR2
     ADJUSTED SAVINGS THIRD DEPLOY YR = THIRD YR COST SAVINGS * PRESENT VALUE FACTOR3
     ADJUSTED SAVINGS FOURTH DEPLOY YR = FOURTH YR COST SAVINGS * PRESENT VALUE FACTOR4
     ADJUSTED SAVINGS FIFTH DEPLOY YR = FIFTH YR COST SAVINGS * PRESENT VALUE FACTOR5
*
*
*
     OPPORTUNITY COSTS = 0,0,0,ADJUSTED SAVINGS FIRST DEPLOY YR,ADJUSTED SAVINGS SECOND DEPLOY YR,'
                         ADJUSTED SAVINGS THIRD DEPLOY YR,ADJUSTED SAVINGS FOURTH DEPLOY YR,'
                         ADJUSTED SAVINGS FIFTH DEPLOY YR
*
*
**************************************************************************************************
*********************************** PROJECT TOTAL COST SUMMARY ***********************************
*
*
     PROJECT OFFICE PERS COST = TOTAL PO PERS COST MENS + TOTAL PO PERS COST SDP1 + TOTAL PO PERS COST SDP2 '
                          + TOTAL PO PERS COST SDP3
     ORGANIZATIONAL SUPPORT PERS COST = TOTAL OS PERS COST MENS + TOTAL OS PERS COST SDP1 + TOTAL OS PERS COST SDP2 '
                                  + TOTAL OS PERS COST SDP3
     SUPPORT ACTIVITY PERS COST = TOTAL SA PERS COST MENS + TOTAL SA PERS COST SDP1 + TOTAL SA PERS COST SDP2 '
                            + TOTAL SA PERS COST SDP3
     EXECUTIVE REVIEW PERS COST = TOTAL ER PERS COST MENS + TOTAL ER PERS COST SDP1 + TOTAL ER PERS COST SDP2 '
                            + TOTAL ER PERS COST SDP3
     APPROVAL LEVEL PERS COST = TOTAL AL PERS COST MENS + TOTAL AL PERS COST SDP1 + TOTAL AL PERS COST SDP2 '
                          + TOTAL AL PERS COST SDP3
     ACQUISITION PROCESSING PERS COST = TOTAL AP PERS COST MENS + TOTAL AP PERS COST SDP1 + TOTAL AP PERS COST SDP2 '
                                  + TOTAL AP PERS COST SDP3
*
     TOTAL PROJECT PERS COST = TOTAL PROJECT PERS COST MENS + TOTAL PROJECT PERS COST SDP1 '
                         + TOTAL PROJECT PERS COST SDP2 + TOTAL PROJECT PERS COST SDP3
*
*
     MGT SUPPORT COSTS = TOTAL MGT SUPPORT COSTS MENS + TOTAL MGT SUPPORT COSTS SDP1 + TOTAL MGT SUPPORT COSTS SDP2 '
                     + TOTAL MGT SUPPORT COSTS SDP3
     STUDIES AND ANALYSIS COST = TOTAL STUDIES AND ANALYSIS MENS + TOTAL STUDIES AND ANALYSIS SDP1 '
                             + TOTAL STUDIES AND ANALYSIS SDP2 + TOTAL STUDIES AND ANALYSIS SDP3
     DESIGN AND DEVELOPMENT COST = TOTAL DESIGN AND DEVELOPMENT SDP1 '
                               + TOTAL DESIGN AND DEVELOPMENT SDP2 + TOTAL DESIGN AND DEVELOPMENT SDP3
     ENGINEERING SERVICES COST = TOTAL ENGINEERING SERVICES SDP3
     TESTING AND TRAINING COST = TOTAL TESTING AND TRAINING SDP3
*
     TOTAL CONTRACTOR SUPPORT COST = TOTAL CONTRACTOR SUPPORT COSTS MENS + TOTAL CONTRACTOR SUPPORT COSTS SDP1 '
                                 + TOTAL CONTRACTOR SUPPORT COSTS SDP2 + TOTAL CONTRACTOR SUPPORT COSTS SDP3
*
*
     TOTAL OTHER AGENCY OR DEPARTMENT SUPPORT COST = TOTAL OTHER AGENCY OR DEPARTMENT SUPPORT MENS '
                                                 + TOTAL OTHER AGENCY OR DEPARTMENT SUPPORT SDP1 '
                                                 + TOTAL OTHER AGENCY OR DEPARTMENT SUPPORT SDP2'
                                                 + TOTAL OTHER AGENCY OR DEPARTMENT SUPPORT SDP3
*
*
     TOTAL MATERIAL AND EQUIPMENT COST = TOTAL MATERIAL AND EQUIPMENT MENS + TOTAL MATERIAL AND EQUIPMENT SDP1 '
                                     + TOTAL MATERIAL AND EQUIPMENT SDP2 + TOTAL MATERIAL AND EQUIPMENT SDP3
*
```

```
10800    *
10810        TOTAL OTHER DIRECT COSTS = TOTAL OTHER DIRECT COSTS MENS + TOTAL OTHER DIRECT COSTS SDP1 '
10820                                   + TOTAL OTHER DIRECT COSTS SDP2 + TOTAL OTHER DIRECT COSTS SDP3
10830    *
10840    *
10850    *
10860            TOTAL PROJECT COST = TOTAL MENS COST + TOTAL SDP1 COST + TOTAL SDP2 COST + TOTAL SDP3 COST
10870    *
10880    *
10890            OPPORTUNITY COSTS = 0,0,0,ADJUSTED SAVINGS FIRST DEPLOY YR,ADJUSTED SAVINGS SECOND DEPLOY YR,'
10900                                ADJUSTED SAVINGS THIRD DEPLOY YR,ADJUSTED SAVINGS FOURTH DEPLOY YR,'
10910                                ADJUSTED SAVINGS FIFTH DEPLOY YR
10920    *
10930    *
10940            ADJUSTED TOTAL PROJECT COST = TOTAL PROJECT COST + OPPORTUNITY COSTS
10950     *
10960     *
10970     *
10980     ******************************************************************************************************************************************************
10990     ******************************************************************************************************************************************************
```

APPENDIX D

SAMPLE PROJECT DEVELOPMENT COST DATA

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*   ||||||||||||||||||||||||||||||||||||||||||||||||||||||||
*   ||                                                    ||
*   ||   COST DATA FOR  THE MODEL IS INPUTED EITHER AS A  ||
*   ||   SPECIFIC VALUE SUCH AS 10, 2.5, OR 15000 OR AS A ||
*   ||   PROBABILITY DISTRIBUTION SUCH AS TRIRANO (2000,  ||
*   ||   5000,10000) WHICH IDENTIFIES A TRIANGULAR        ||
*   ||   DISTRIBUTION WITH 2000 REPRESENTING THE LOWER    ||
*   ||   LIMIT, 5000 REPRESENTING THE MOST PROBABLE       ||
*   ||   VALUE, AND 10000 REPRESENTING THE UPPER LIMIT.   ||
*   ||   SEVERAL DIFFERENT PROBABILITY DISTRIBUTIONS ARE  ||
*   ||   AVAILABLE WITH IFPS AND THE USER IS REFERRED TO  ||
*   ||   THE IFPS USER'S MANUAL FOR DESCRIPTION AND       ||
*   ||   FORMAT OF EACH.  LEADING ZEROS ARE REQUIRED FOR  ||
*   ||   THOSE YEARS IN WHICH NO CCSTS ARE INCURRED FOR A ||
*   ||   VARIABLE AND A SINGLE ZERO AFTER THE LAST YEAR   ||
*   ||   COSTS ARE INCURRED (EXCEPT YR8) IS REQUIRED.     ||
*   ||                                                    ||
*   ||||||||||||||||||||||||||||||||||||||||||||||||||||||||
*
*
**********************MENS COST CATA****************************
**********************PERSONNEL COSTS***************************
*
*   ||||||||||||||||||||||||||||||||||||||||||||||||||||||||
*   ||                                                    ||
*   ||   PERSONNEL COST DATA IS INPUTED BY MANYEAR (OR    ||
*   ||   FRACTION OF MANYEAR) EFFORT FOR EACH OF THE YEARS||
*   ||   IN WHICH COSTS ARE INCURRED.  LEADING ZEROS FOR  ||
*   ||   YEARS IN WHICH COSTS ARE NOT INCURRED AND A      ||
*   ||   SINGLE TRAILING ZERO FOR REMAINING YEARS IS      ||
*   ||   REQUIRED.                                        ||
*   ||                                                    ||
*   ||||||||||||||||||||||||||||||||||||||||||||||||||||||||
*
*
*******************PROJECT OFFICE PERSONNEL*******************
   PO SENIOR EXEC PERS MENS = 1.1.0
   PO EXEC PERS MENS = 2,2,0
   PO MGT PERS MENS = 2,2,0
   PO TECH PERS MENS = 2.2.0
   FO CLERICAL PERS MENS = 1,1,0
********************ORGANIZATICNAL SUPPORT PERSONNEL*********
   OS SENIOR EXEC PERS MENS = 0,0,0
   OS EXEC PERS MENS = 1,1,0
   OS MGT PERS MENS = 1,1,0
   OS TECH PERS MENS = 1.3.0
   OS CLERICAL PERS MENS = 1.1,0
*********************SUPPORT ACTIVITIES PERSONNEL COST********
   SA SENIOR EXEC PERS MENS = .5,.5,0
   SA EXEC PERS MENS = .5,1.0
   SA MGT PERS MENS = 1,2,0
   SA TECH PERS MENS = 2.5.0
   SA CLERICAL PERS MENS = 1,1,0
********************EXECUTIVE REVIEW PERSONNEL****************
   ER SENIOR EXEC PERS MENS = .6,.6,0
   ER EXEC PERS MENS = .6,.6,0
   ER MGT PERS MENS = 1,1,0
   ER TECH PERS MENS = C,0,0
   ER CLERICAL PERS MENS = 1,1,0
***********************APPROVAL LEVEL PERSONNEL***************
   AL SENIOR EXEC PERS MENS = 0,.2,0
   AL EXEC PERS MENS = .2,.2,0
   AL MGT PERS MENS = 0,0,0
   AL TECH PERS MENS = 0,0,0
   AL CLERICAL PERS MENS = 0,0,0
*****
*********************ACQUISITION PROCESSING PERSONNEL*********
   AP SENIOR EXEC PERS MENS = 0,0,0
   AP EXEC PERS MENS = 0,0,0
   AP MGT PERS MENS = 0,.5,0
   AP TECH PERS MENS = 0,.5,0
```

```
   AP CLERICAL PERS MENS = 0,0,0
*****
***************************PERSONNEL SALARIES*******************
   SENIOR EXEC SALARY = TRIRAND (74561,84696,91376), PREVIOUS * 1.04
   EXEC SALARY = TRIRANO (51708,58130,66022), PREVIOUS * 1.04
   MGT SALARY = TRIRAND (33801,41184,48308), PREVIOUS * 1.04
   TECH SALARY = TRIRAND (19499,30255,33708), PREVIOUS * 1.04
   CLERICAL SALARY = TRIRAND (11030,14000,17000), PREVIOUS * 1.04
*****
***********************CONTRACTOR SUPPORT COSTS*****************
*****
   PROGRAM MGT SUPPORT MENS = TRIRAND (50000,100000,150000), PREVIOUS * 1.1,0
   MS OTHER MENS = 0,0,0,0
   POA&M ANALYSIS MENS = TRIRAND (60000,120000,150000),PREVIOUS * 1.1,0
   ECONOMIC ANALYSIS MENS = TRIRAND ( 75000,120000,150000),PREVICUS * 1.1,0
   S&A OTHER MENS = 0,0,0,0
*****
***********************OTHER AGENCY/DEPARTMENT SUPPORT**********
*****
   PROJECT SUPPORT SERVICES MENS = 0,0,0,0
   STUDIES AND ANALYSIS MENS = 50000,50000,0,0
   DESIGN SERVICES MENS = 0,0,0,0
   ENGINEERING SERVICES MENS = 0,0,0,0
   FACILITIES SERVICES MENS = 0,0,0,0
*****
***************************MATERIAL AND EQUIPMENT***************
*****
   OFFICE EQUIPMENT MENS = 0,0,0
   OFFICE SUPPLIES MENS = 1000,1000,0
   COMPUTER EQUIPMENT MENS = 0,0,0
   COMPUTER SUPPLIES MENS = 0,0,C
   COMPUTER S/W MENS = 0,0,0
   M&E OTHER MENS = 0,0,0
*****
*****
****************************OTHER CIRECT COSTS******************
*****
*****
   TRAVEL MENS = 0,50000,0
   UTILITIES MENS = 0,0,0
   PRINTING & REPRODUCTION MENS = 0,0,0
   OFFICE EQUIPMENT RENTAL MENS = 5000,10000,0
   FACILITY RENTAL & MODIFICATION MENS = 0,0,0
   TRAINING MENS = 0,0,0
   SITE PREPARATION MENS = 0,0,0
   OTHER EQUIPMENT RENTAL MENS = 0,0,0
   MAINTENANCE MENS = 0,0,0
   MISCELLANEOUS MENS = 0,0,0
************************SDP1 COST CATA**************************
************************PERSONNEL COSTS*************************
**********************PROJECT OFFICE PERSONNEL*******************
   PO SENIOR EXEC PERS SDP1 = 0,0,1,1,0
   PO EXEC PERS SDP1 = 0,0,2,2,0
   PO MGT PERS SDP1 = 0,0,2,3,0
   PO TECH PERS SDP1 = 0,0,2,4,0
   PO CLERICAL PERS SDP1 = 0,0,2,2,0
************************ORGANIZATIGNAL SUPPORT PERSONNEL*********
   OS SENIOR EXEC PERS SDP1 = 0,0,0,0,0
   OS EXEC PERS SDP1 = C,0,1,1,0
   OS MGT PERS SDP1 = 0,0,1,1,0
   OS TECH PERS SDP1 = 0,0,3,3,0
   OS CLERICAL PERS SDP1 = 0,0,1,1,0
***********************SUPPORT ACTIVITIES PERSONNEL COST********
   SA SENIOR EXEC PERS SDP1 = 0,0,.2,.2,0
   SA EXEC PERS SDP1 = 0,0,1,1,0
   SA MGT PERS SDP1 = 0,0,2,2,0
   SA TECH PERS SDP1 = 0,0,3,3,0
   SA CLERICAL PERS SDP1 = 0,0,1,1,0
**********************EXECUTIVE REVIEW PERSONNEL*****************
   ER SENIOR EXEC PERS SDP1 = 0,C,.6,.6,0
   ER EXEC PERS SDP1 = 0,0,.6,.6,0
   ER MGT PERS SDP1 = 0,0,1,1,0
```

```
    ER TECH PERS SDP1 = 0,0,0,0
    ER CLERICAL PERS SDP1 = 0,0,0,0
**************************APPROVAL LEVEL PERSONNEL****************
    AL SENIOR EXEC PERS SDP1 = 0,0,.2,.2,0
    AL EXEC PERS SDP1 = 0,0,.2,.2,0
    AL MGT PERS SDP1 = 0,0,0,0
    AL TECH PERS SDP1 = 0,0,0,0
    AL CLERICAL PERS SDP1 = 0,0,0,0
*****
***********************ACQUISITION PROCESSING PERSONNEL***********
    AP SENIOR EXEC PERS SDP1 = 0,C,0,0
    AP EXEC PERS SDP1 = 0,0,0,0
    AP MGT PERS SDP1 = 0,0,.2,.2,0
    AP TECH PERS SDP1 = 0,0,.3,.3,0
    AP CLERICAL PERS SDP1 = 0,0,.1,.1,0
*****
*****
***********************CONTRACTOR SUPPORT COSTS*******************
*****
    PROGRAM MGT SUPPORT SDP1 = 0,0,TRIRAND (10000,100000,150000),PREVIOUS * 1.1,0
    MS OTHER SOP1 = 0,0,0,0,0
    PERT CHART DEVELOPMENT SDP1 = 0,0,TRIRAND (60000,90000,120000),0,0
    POA&M MGT SUPPORT SDPI = 0,0,TRIRAND (20000,50000,75000),PREVIOUS * 1.1,0
    INTERIN CCNVERSION STUDY SDP1 = 0,0,TRIRAND (75000,100000,150000),0
    TECHNOLOGY ANALYSIS SDP1 = 0,0,TRIRAND (50000,70000,90000),PREVIOUS * .75,0
    OATA COMM PLAN STUDY SDP1 = 0,0,TRIRAND (50000,90000,110000),'
                                PREVICUS * 1.1,0
    SECURITY & PRIVACY STUDY SDP1 = 0,0,TRIRAND (50000,70000,90000),'
                                    PREVIOUS * 1.1,0
    BENCHMARK REQUIREMENTS STUDY SDP1 = 0,0,TRIRAND (75000,120000,150000),'
                                        PREVIOUS * 1.1,0
    PRELIM ARCHITECTURAL STRATEGY SDP1 = 0,0,TRIRAND (60000,100000,130000),'
                                         PREVIOUS * 1.1,0
    D&D CTHER SDP1 = 0,0,0,0

    ECONOMIC ANALYSIS SDP1 = 0,0,TRIRAND (75000,100000,150000),0
    S&A OTHER SDP1 = 0,0,0,0
*****
***********************OTHER AGENCY/DEPARTMENT SUPPORT************
*****
    PROJECT SUPPORT SERVICES SDP1 = 0,0,0,0
    STUDIES AND ANALYSIS SDP1 = 0,0,100000,100000,0
    DESIGN SERVICES SDP1 = 0,0,0,0
    ENGINEERING SERVICES SDP1 = 0,0,0,0
    FACILITIES SERVICES SDP1 = 0,C,0,0
*****
***************************MATERIAL AND EQUIPMENT*****************
*****
    OFFICE ECUIPMENT SDP1 = 0,0,10000,10000,0
    OFFICE SUPPLIES SOP1 = 0,0,20C0,2000,0
    COMPUTER EQUIPMENT SDP1 = 0,0,0,0
    COMPUTER SUPPLIES SDP1 = 0,0,0,0
    COMPUTER S/W SDP1 = C,0,0,0
    M&E OTHER SDP1 = 0,0,0,0
*****
*****
****************************OTHER CIRECT COSTS********************
*****
*****
    TRAVEL SDP1 = 0,0,50000,60000,0
    UTILITIES SDP1 = 0,0,0,0
    PRINTING & REPRODUCTION SDP1 = 0,0,10000,10000,0
    OFFICE EQUIPMENT RENTAL SDP1 = 0,0,0,0
    FACILITY RENTAL & MODIFICATICN SDP1 = 0,0,0,0
    TRAINING SDP1 = 0,0,0,0
    SITE PREPARATION SDP1 = 0,0,0,0
    OTHER EQUIPMENT RENTAL SDP1 = 0,0,0,0
    MAINTENANCE SDP1 = 0,0,0,0
    MISCELLANEGUS SOP1 = 0,0,0,0
************************SOP2 COST DATA****************************
************************PERSONNEL COSTS***************************
*********************PROJECT OFFICE PERSONNEL*********************
```

```
   PO SENIOR EXEC PERS SDP2 = 0,C,0,0,1,1,0
   PO EXEC PERS SOP2 = 0,0,0,0,2,2,0
   PO MGT PERS SDP2 = 0,0,0,0,3,3,0
   PO TECH PERS SDP2 = 0,0,0,0,4,4,0
   PO CLERICAL PERS SDP2 = 0,0,0,0,2,2,0
************************ORGANIZATIONAL SUPPORT PERSONNEL**********
   OS SENIOR EXEC PERS SDP2 = 0,0,0,0,0,0,0
   OS EXEC PERS SDP2 = C,0,0,0,1,1,0
   OS MGT PERS SDP2 = 0,0,0,0,1,1,0
   OS TECH PERS SDP2 = 0,0,0,0,3,3,0
   OS CLERICAL PERS SDP2 = 0,0,0,0,1,1,0
************************SUPPORT ACTIVITIES PERSONNEL COST*********
   SA SENIOR EXEC PERS SDP2 = 0,0,0,0,1,1,0
   SA EXEC PERS SDP2 = G,0,0,0,1,1,0
   SA MGT PERS SDP2 = 0,0,0,0,2,2,0
   SA TECH PERS SDP2 = 0,0,0,0,7,8,0
   SA CLERICAL PERS SDP2 = 0,0,0,0,1,2,0
***********************EXECUTIVE REVIEW PERSONNEL*****************
   ER SENIOR EXEC PERS SOP2 = 0,C,0,0,1,1,0
   ER EXEC PERS SOP2 = 0,0,0,0,1,1,0
   ER MGT PERS SDP2 = 0,0,0,0,0,0,0
   ER TECH PERS SOP2 = C,0,0,0,0,3,0
   ER CLERICAL PERS SDP2 = 0,0,0,0,1,1,0
*************************APPROVAL LEVEL PERSONNEL*****************
   AL SENIOR EXEC PERS SDP2 = 0,0,0,0,.3,.3,0
   AL EXEC PERS SDP2 = 0,0,0,0,.3,.3,0
   AL MGT PERS SOP2 = 0,0,0,0,1,1,0
   AL TECH PERS SOP2 = 0,0,0,0,0,3,0
   AL CLERICAL PERS SDP2 = 0,0,0,0,0,0,0
*****
************************ACQUISITION PROCESSING PERSONNEL*********
   AP SENIOR EXEC PERS SDP2 = 0,0,0,0,0,0,0,0
   AP EXEC PERS SDP2 = 0,0,G,0,C,0,0
   AP MGT PERS SDP2 = 0,0,0,0,1,1,0
   AP TECH PERS SOP2 = 0,0,0,0,1,1,0
   AP CLERICAL PERS SOP2 = 0,0,0,0,1,1,0
*****
*****
***********************CONTRACTOR SUPPORT COSTS******************
*****
   PROGRAM MGT SUPPORT SDP2 = 0,0,0,0,TRIRANO (50000,100000,150000),'
   PREVIOUS * 1.1,0
   MS OTHER SDP2 = 0,0,0,0,0,0,0,0
   CONVERSION PLAN SDP2 = 0,0,0,0,TRIRANO (100000,130000,170000),'
                          PREVIOUS * .5,0
   TECHNOLOGY ANALYSIS SDP2 = 0,0,0,0,TRIRANO (50000,80000,100000),'
                              PREVIOUS * 1.1,0
   SECURITY & PRIVACY STUDY SDP2 = 0,0,0,0,TRIRAND (50000,70000,90000),0
   BENCHMARK PLAN SDP2 = 0,0,0,0,TRIRAND (100000,130000,150000),PREVIOUS * 1.1,0
   ARCHITECTURAL STRATEGY PLAN SDP2 = 0,0,0,0,TRIRAND (75000,100000,120000),'
                                      PREVIOUS * 1.1,0
   O&D OTHER SDP2 = 0,0,0,0,0,0,C,0
   DOCUMENTATION MGT SUPPORT SOP2 = 0,0,0,0,TRIRAND (20000,40000,50000),'
                                    PREVIOUS * 1.1,0
   CONFIGURATION MGT STUDY SOP2 = 0,0,0,0,TRIRAND (80000,100000,120000),'
                                  PREVIOUS * 1.1,0
   LOGISTICS STUOY SDP2 = 0,0,0,0,TRIRAND (80000,120000,150000),PREVIOUS * 1.1,0
   TRAINING REQUIREMENTS STUDY SOP2 = 0,0,0,0,TRIRAND (50000,70000,110000),0
   STANDARDIZATION STUDY SOP2 = C,0,0,0,0,TRIRAND (60000,90000,120000),0
   INTEROPERABILITY ANALYSIS SDP2 = 0,0,0,0,0,TRIRANO (50000,70000,100000),0
   TEST & EVAL RQMTS STUDY SOP2 = 0,0,0,0,TRIRAND (75000,110000,140000),'
                                  PREVIOUS * 1.1,0
   DATABASE CESIGN SDP2 = 0,0,0,0,TRIRAND (100000,120000,150000),'
                          PREVICUS * 1.1,0
   PHYSICAL SYS DESIGN SDP2 = 0,C,0,C,TRIRAND (100000,120000,150000),'
                              PREVIOUS * 1.1,0
   DATA COMM PLAN SDP2 = 0,0,0,0,0,TRIRANO (80000,120000,140000),0
   HW & SW MAINTENANCE PLAN SDP2 = 0,0,0,0,TRIRAND (100000,120000,150000),0
   FACILITIES UPGRADE PLAN SDP2 = 0,0,0,0,0,TRIRAND (70000,90000,110000),0
   ECONOMIC ANALYSIS SOP2 = 0,0,C,0,TRIRAND (40000,60000,90000),PREVIOUS *1.1,0
   S&A OTHER SDP2 = 0,0,0,0,0,0,0,0
*****
```

```
*************************OTHER AGENCY/DEPARTMENT SUPPORT***********
*****
   PROJECT SUPPORT SERVICES SOP2 = 0,0,0,0,20000,20000,0
   STUDIES AND ANALYSIS SDP2 = 0,0,0,0,0,50000,0
   DESIGN SERVICES SDP2 = 0,0,0,0,30000,40000,0
   ENGINEERING SERVICES SDP2 = 0,0,0,0,0,0
   FACILITIES SERVICES SDP2 = 0,0,0,0,0,0
*****
**************************MATERIAL AND EQUIPMENT*****************
*****
   OFFICE EQUIPMENT SOP2 = 0,0,0,0,5000,0,0
   OFFICE SUPPLIES SOP2 = 0,0,0,0,3000,3000,0
   COMPUTER EQUIPMENT SDP2 = 0,0,0,0,50000,20000,0
   COMPUTER SUPPLIES SOP2 = 0,0,0,0,10000,2000,0
   COMPUTER S/W SOP2 = 0,0,0,0,2000,2000,0
   MCE OTHER SOP2 = 0,0,0,0
*****
*****
****************************OTHER DIRECT COSTS*******************
*****
*****
   TRAVEL SOP2 = 0,0,0,0,60000,60000,0
   UTILITIES SDP2 = 0,0,0,0,0,0
   PRINTING & REPRODUCTION SDP2 = 0,0,0,0,5000,10000,0
   OFFICE EQUIPMENT RENTAL SDP2 = 0,0,0,0,0,0
   FACILITY RENTAL & MODIFICATION SOP2 = 0,0,0,0,0,0
   TRAINING SOP2 = 0,0,0,0,10000,15000,0
   SITE PREPARATION SDP2 = 0,0,0,0,0,0
   OTHER EQUIPMENT RENTAL SDP2 = 0,0,0,0,0,0
   MAINTENANCE SDP2 = 0,0,0,0,0,0
   MISCELLANEOUS SDP2 = 0,0,0,0,0,0
************************SDP3 COST DATA****************************
************************PERSONNEL COSTS***************************
**********************PROJECT OFFICE PERSONNEL********************
   PO SENIOR EXEC PERS SOP3 = 0,0,0,0,0,0,1,1
   PO EXEC PERS SOP3 = 0,0,0,0,0,0,2,2
   PO MGT PERS SOP3 = 0,0,0,0,0,0,3,3
   PO TECH PERS SOP3 = 0,0,0,0,0,0,5,5
   PO CLERICAL PERS SOP3 = 0,0,0,0,0,0,2,2
***********************ORGANIZATIONAL SUPPORT PERSONNEL**********
   OS SENIOR EXEC PERS SDP3 = 0,0,0,0,0,0,0,0
   OS EXEC PERS SDP3 = 0,0,0,0,0,0,1,1
   OS MGT PERS SDP3 = 0,0,0,0,0,0,2,2
   OS TECH PERS SDP3 = 0,0,0,0,0,0,4,4
   OS CLERICAL PERS SOP3 = 0,0,0,0,0,0,1,1
***********************SUPPORT ACTIVITIES PERSONNEL COST*********
   SA SENIOR EXEC PERS SDP3 = 0,0,0,0,0,0,.5,.5
   SA EXEC PERS SDP3 = 0,0,0,0,0,0,1,2
   SA MGT PERS SDP3 = 0,0,0,0,0,0,2,3
   SA TECH PERS SDP3 = 0,0,0,0,0,0,7,7
   SA CLERICAL PERS SDP3 = 0,0,0,0,0,0,2,2
***********************EXECUTIVE REVIEW PERSONNEL*****************
   ER SENIOR EXEC PERS SOP3 = 0,0,0,0,0,0,1,1
   ER EXEC PERS SOP3 = 0,0,0,0,0,0,1,1
   ER MGT PERS SDP3 = 0,0,0,0,0,0,1,1
   ER TECH PERS SDP3 = 0,0,0,0,0,0,0,0
   ER CLERICAL PERS SOP3 = 0,0,0,0,0,0,1,1
**************************APPROVAL LEVEL PERSONNEL****************
   AL SENIOR EXEC PERS SDP3 = 0,0,0,0,0,0,.3,.3
   AL EXEC PERS SDP3 = 0,0,0,0,0,0,.3,.3
   AL MGT PERS SOP3 = 0,0,0,0,0,0,0,0
   AL TECH PERS SDP3 = 0,0,0,0,0,0,0,0
   AL CLERICAL PERS SDP3 = 0,0,0,0,0,0,0,0
*****
*************************ACQUISITION PROCESSING PERSONNEL*********
   AP SENIOR EXEC PERS SDP3 = 0,0,0,0,0,0,.1,.1
   AP EXEC PERS SDP3 = 0,0,0,0,0,0,.2,.2
   AP MGT PERS SDP3 = 0,0,0,0,0,0,1,1
   AP TECH PERS SDP3 = 0,0,0,0,0,0,2,2
   AP CLERICAL PERS SOP3 = 0,0,0,0,0,0,1,1
*****
*************************CONTRACTOR SUPPORT COSTS*****************
```

```
*****
   PROGRAM MGT SUPPORT SDP3 = 0,0,0,0,0,0,TRIRAND (70000,100000,120000),'
                              PREVIOUS * 1.1
   MS OTHER SDP3 = 0,0,0,0,0,0,0,0
   CONVERSION PLAN SDP3 = 0,0,0,0,0,0,TRIRAND (50000,70000,120000),'
                          PREVIOUS * 1.1
   SECURITY & PRIVACY PLAN SDP3 = 0,0,0,0,0,0,TRIRAND (70000,100000,115000),0
   ARCHITECTURAL STRATEGY PLAN SDP3 = 0,0,0,0,0,0,TRIRAND (50000,80000,100000),0
   D&D OTHER SDP3 = 0,0,0,0,0,0,0,0
   DOCUMENTATION MGT SUPPORT SDP3 = 0,0,0,0,0,0,TRIRAND (50000,60000,75000),'
                                    PREVIOUS * 1.1
   BENCHMARK PLAN SDP3 = 0,0,0,0,0,0,TRIRAND (50000,80000,110000),'
                         PREVIOUS * 1.1
   CONFIGURATION MGT PLAN SDP3 = 0,0,0,0,0,0,TRIRAND (75000,120000,150000),'
   PREVIOUS * 1.1
   LOGISTICS PLAN SDP3 = 0,0,0,0,0,0,TRIRAND (75000,115000,130000),0
   TRAINING PLAN SDP3 = 0,0,0,0,0,0,0,TRIRAND (60000,80000,110000)
   STANDARDIZATION PLAN SDP3 = 0,0,0,0,0,0,TRIRAND (60000,90000,120000),0
   TEST & EVALUATION PLAN SDP3 = 0,0,0,0,0,0,0,TRIRAND (70000,110000,120000)
   DATABASE DESIGN SDP3 = 0,0,0,0,0,0,TRIRAND (120000,150000,180000),'
   PREVIOUS * 1.1
   INTEGRATION MGT SUPPORT SDP3 = 0,0,0,0,0,0,TRIRAND (75000,100000,120000),'
                                  PREVIOUS * 1.1
   PHYSICAL SYS DESIGN SDP3 = 0,0,0,0,0,0,TRIRAND (120000,150000,180000),'
   PREVIOUS * 1.1
   DATA COMM PLAN SDP3 = 0,0,0,0,0,0,TRIRAND (75000,110000,130000),0
   HW & SW MAINTENANCE PLAN SDP3 = 0,0,0,0,0,0,TRIRAND (60000,90000,115000),'
   PREVIOUS * 1.1
   FACILITIES UPGRADE PLAN SDP3 = 0,0,0,0,0,0,0,TRIRAND (90000,110000,140000)
   ECONOMIC ANALYSIS SDP3 = 0,0,0,0,0,0,TRIRAND (30000,50000,70000),'
   PREVIOUS * 1.1
   S&A OTHER SDP3 = 0,0,0,0,0,0,0,0
   SITE PREPARATION PLAN SDP3 = 0,0,0,0,0,0,TRIRAND (80000,105000,120000),0
   HW & SW ACCEPTANCE TEST PLAN SDP3 = 0,0,0,0,0,0,0,'
   TRIRAND (60000,90000,110000)
   SW ENGINEERING SERVICES SDP3 = 0,0,0,0,0,0,TRIRAND (120000,150000,170000),'
   PREVIOUS * 1.1
   INSTALL PROTOTYPE HW & SW SDP3 = 0,0,0,0,0,0,TRIRAND (300000,50000,700000),'
   PREVIOUS * 1.1
   ES OTHER SDP3 = 0,0,0,0,0,0,0,0
   VENDOR SW TRAINING SDP3 = 0,0,0,0,0,0,TRIRAND (40000,60000,75000),'
   PREVIOUS * 1.1
   T&T OTHER SDP3 = 0,0,0,0,0,0,0,0

*****
***********************OTHER AGENCY/DEPARTMENT SUPPORT**********
*****
   PROJECT SUPPORT SERVICES SDP3 = 0,0,0,0,0,0,50000,50000
   STUDIES AND ANALYSIS SDP3 = 0,0,0,0,0,0,0,0
   DESIGN SERVICES SDP3 = 0,0,0,0,0,0,75000,75000
   ENGINEERING SERVICES SDP3 = 0,0,0,0,0,0,50000,100000
   FACILITIES SERVICES SDP3 = 0,0,0,0,0,0,0,0
*****
***************************MATERIAL AND EQUIPMENT***************
*****
   OFFICE EQUIPMENT SDP3 = 0,0,0,0,0,0,3000,2000
   OFFICE SUPPLIES SDP3 = 0,0,0,0,0,0,3000,3000
   COMPUTER EQUIPMENT SDP3 = 0,0,0,0,0,0,2000,2000
   COMPUTER SUPPLIES SDP3 = 0,0,0,0,0,0,2000,2000
   COMPUTER S/W SDP3 = 0,0,0,0,0,0,2000,2000
   M&E OTHER SDP3 = 0,0,0,0
*****
*****
****************************OTHER DIRECT COSTS******************
*****
*****
   TRAVEL SDP3 = 0,0,0,0,0,0,100000,100000
   UTILITIES SDP3 = 0,0,0,0,0,0,5000,5000
   PRINTING & REPRODUCTION SDP3 = 0,0,0,0,0,0,5000,5000
   OFFICE EQUIPMENT RENTAL SDP3 = 0,0,0,0,0,0,0,0
   FACILITY RENTAL & MODIFICATION SDP3 = 0,0,0,0,0,0,250000,200000
   TRAINING SDP3 = 0,0,0,0,0,0,15000,15000
```

```
   SITE PREPARATION SOP3 = 0,0,0,0,0,0,20000,50000
   OTHER EQUIPMENT RENTAL SOP3 = 0,0,0,0,0,0,0,0
   MAINTENANCE SDP3 = 0,0,0,0,0,0,0,0
   MISCELLANEOUS SDP3 = 0,0,0,0
YR COST SAVINGS START = 12
FIRST YR COST SAVINGS = 0,0,0,1000000,0,0,0,0
SECOND YR COST SAVINGS = 0,0,0,0,2000000,0,0,0
THIRD YR COST SAVINGS = 0,0,0,0,0,1000000,0,0
FOURTH YR COST SAVINGS = 0,0,0,0,0,0,2000000,0
FIFTH YR COST SAVINGS = 0,0,0,0,0,0,0,3000000
NEW SYSTEM DEPLOY YR = 3
```

APPENDIX E

SAMPLE PROJECT DEVELOPMENT OUTPUT

```
FILE: IFPSREC  IFPS     A1  NAVAL POSTGRADUATE SCHOOL                                                    PACE 001

 READY FOR MCDELING LANCUAGE COMMANO
 INPUT: MODEL PROJMOD USING BASTCOST
 READY FOR EDIT, LAST LINE IS 10880
 INPUT: SOLVE
 MODEL PROJMOD  VERSION OF  03/17/84  13:10 — 8 COLUMNS 504 VARIABLES
 ENTER SOLVE OPTIONS
 INPUT: WIOTH 132 40 10
 INPUT: ALL
                                                     YR1       YR2       YR3       YR4       YR5       YR6       YR7       YR8

*************************************** PROJECT DEVELOPMENT COST MODEL ***************************************
*****************************************************************************************************************

       ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
       ||                                                                                       ||
       ||    THE FCLLOWING COST MODEL IS DIVIDED INTO FOUR MODULES; MENS, SOP1, SOP2, ANO SOP3.  ||
       ||    EACH MODULE PROVIDES A COST ELEMENT BREAKDOWN BY YEAR FOR THE MAJOR COST ELEMENTS  ||
       ||    OR CATEGORIES IDENTIFIED AS GERMAINE TO MAJOR AIS ACQUISITION PROJECTS.  ALL       ||
       ||    MODEL VARIABLES ARE ASSIGNED A ZERO VALUE WHICH REQUIRES THE USE OF AN IFPS OATA   ||
       ||    FILE TO INPUT DESIRED VALUES FOR EACH VARIABLE.  USERS DESIRING TO ADD, DELETE     ||
       ||    OR CHANGE VARIABLES OR COMPUTATIONS ARE REFERRED TO THE IFPS USERS MANUAL          ||
       ||    RELEASE 9.0 (EXECUCOM SYSTEMS CORPORATION, P.O. BOX 9758, AUSTIN, TEXAS 787661.    ||
       ||                                                                                       ||
       ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||

*****************************************************************************************************************
************************************** PERSONNEL YEARLY SALARIES ************************************************

      SENIOR EXEC SALARY                            83544     86886     90362     93976     97735    101644    105710    109939
      EXEC SALARY                                   58620     60965     63403     65940     68577     71320     74173     77140
      MGT SALARY                                    41098     42742     44451     46229     48078     50002     52002     54082
      TECH SALARY                                   27821     28933     30091     31294     32546     33848     35202     36610
      CLERICAL SALARY                               14000     14560     15142     15748     16378     17033     17714     18423

*****************************************************************************************************************
********************************************* MENS COST MODULE **************************************************

*************** PERSONNEL COSTS ***************

****  PROJECT OFFICE PERSONNEL  *****

     PO SENIOR EXEC PERS MENS                           1         1         0         0         0         0         0         0
     PO EXEC PERS MENS                                  2         2         0         0         0         0         0         0
     PO MGT PERS MENS                                   2         2         0         0         0         0         0         0
     PO TECH PERS MENS                                  2         2         0         0         0         0         0         0
     PO CLERICAL PERS MENS                              1         1         0         0         0         0         0         0

     PO SENIOR EXEC PERS COST MENS                  83544     86886         0         0         0         0         0         0
     PO EXEC PERS COST MENS                        117240    121930         0         0         0         0         0         0
     PO MGT PERS COST MENS                          82195     85483         0         0         0         0         0         0
     PO TECH PERS COST MENS                         55641     57867        -0         0         0         0         0         0
     PO CLERICAL PERS COST MENS                     14000     14560         0         0         0         0         0         0

     TOTAL PO PERS COST MENS                       352621    366726         0         0         0         0         0         0

****  ORGANIZATIONAL SUPPORT PERSONNEL  *****

      OS SENIOR EXEC PERS MENS                          0         0         0         0         0         0         0         0
      OS EXEC PERS MENS                                 1         1         0         0         0         0         0         0
      OS MGT PERS MENS                                  1         1         0         0         0         0         0         0
      OS TECH PERS MENS                                 1         3         0         0         0         0         0         0
      OS CLERICAL PERS MENS                             1         1         0         0         0         0         0         0

      OS SENIOR EXEC PERS COST MENS                     0         0         0         0         0         0         0         0
      OS EXEC PERS COST MENS                        58620     60965         0         0         0         0         0         0
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FILE: IFPSREC  IFPS     A1  NAVAL POSTGRAOUATE SCHOOL                                                PAGE 002

        OS MGT PERS COST MENS                41098     42742      0      0      0      0      0      0
        OS TECH PERS COST MENS               27821     86800      0      0      0      0      0      0
        OS CLERICAL PERS COST MENS           14000     14560      0      0      0      0      0      0

        TOTAL OS PERS COST MENS             141538    205067      0      0      0      0      0      0

 ****  SUPPORT ACTIVITY PERSONNEL  *****

        SA SENIOR EXEC PERS MENS             .5000     .5000      0      0      0      0      0      0
        SA EXEC PERS MENS                    .5000         1      0      0      0      0      0      0
        SA MGT PERS MENS                         1         2      0      0      0      0      0      0
        SA TECH PERS MENS                        2         5      0      0      0      0      0      0
        SA CLERICAL PERS MENS                    1         1      0      0      0      0      0      0

        SA SENIOR EXEC PERS COST MENS        41772     43443      0      0      0      0      0      0
        SA EXEC PERS COST MENS               29310     60965      0      0      0      0      0      0
        SA MGT PERS COST MENS                41098     85483      0      0      0      0      0      0
        SA TECH PERS COST MENS               55641    144667      0      0      0      0      0      0
        SA CLERICAL PERS COST MENS           14000     14560      0      0      0      0      0      0

        TOTAL SA PERS COST MENS             181821    349118      0      0      0      0      0      0

 ****  EXECUTIVE REVIEW PERSONNEL *****

        ER SENIOR EXEC PERS MENS             .6000     .6000      0      0      0      0      0      0
        ER EXEC PERS MENS                    .6000     .6000      0      0      0      0      0      0
        ER MGT PERS MENS                         1         1      0      0      0      0      0      0
        ER TECH PERS MENS                        0         0      0      0      0      0      0      0
        ER CLERICAL PERS MENS                    1         1      0      0      0      0      0      0

        ER SENIOR EXEC PERS COST MENS        50127     52132      0      0      0      0      0      0
        ER EXEC PERS COST MENS               35172     36579      0      0      0      0      0      0
        ER MGT PERS COST MENS                41098     42742      0      0      0      0      0      0
        ER TECH PERS COST MENS                   0         0      0      0      0      0      0      0
        ER CLERICAL PERS COST MENS           14000     14560      0      0      0      0      0      0

        TOTAL ER PERS COST MENS             140396    146012      0      0      0      0      0      0

 ****  APPROVAL LEVEL PERSONNEL  *****

        AL SENIOR EXEC PERS MENS                 0     .2000      0      0      0      0      0      0
        AL EXEC PERS MENS                    .2000     .2000      0      0      0      0      0      0
        AL MGT PERS MENS                         0         0      0      0      0      0      0      0
        AL TECH PERS MENS                        0         0      0      0      0      0      0      0
        AL CLERICAL PERS MENS                    0         0      0      0      0      0      0      0

        AL SENIOR EXEC PERS COST MENS            0     17377      0      0      0      0      0      0
        AL EXEC PERS COST MENS               11724     12193      0      0      0      0      0      0
        AL MGT PERS COST MENS                    0         0      0      0      0      0      0      0
       AL TECH PERS COST MENS                    0         0      0      0      0      0      0      0
       AL CLERICAL PERS COST MENS                0         0      0      0      0      0      0      0

       TOTAL AL PERS COST MENS               11724     29570      0      0      0      0      0      0

 ****  ACQUISITION PROCESSING PERSONNEL  *****

       AP SENIOR EXEC PERS MENS                  0         0      0      0      0      0      0      0
       AP EXEC PERS MENS                         0         0      0      0      0      0      0      0
       AP MGT PERS MENS                          0     .5000      0      0      0      0      0      0
       AP TECH PERS MENS                         0     .5000      0      0      0      0      0      0
       AP CLERICAL PERS MENS                     0         0      0      0      0      0      0      0

       AP SENIOR EXEC PERS COST MENS             0         0      0      0      0      0      0      0
       AP EXEC PERS COST MENS                    0         0      0      0      0      0      0      0
       AP MGT PERS COST MENS                     0     21371      0      0      0      0      0      0
       AP TECH PERS COST MENS                    0     14467      0      0      0      0      0      0
       AP CLERICAL PERS COST MENS                0         0      0      0      0      0      0      0
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FILE: IFPSREC  IFPS     A1  NAVAL POSTGRADUATE SCHOOL                                    PAGE 003

        TOTAL AP PERS COST MENS                0     35838       0       0       0       0       0       0

            TOTAL PROJECT PERS COST MENS  828101   1132331       0       0       0       0       0       0

 ***************  CONTRACTOR SUPPORT COSTS  ***************

 ****  MANAGEMENT SUPPORT *****
        PROGRAM MGT SUPPORT MENS          100000    110000       0       0       0       0       0       0
        MS OTHER MENS                          0         0       0       0       0       0       0       0

            TOTAL MGT SUPPORT COSTS MENS  100000    110000       0       0       0       0       0       0

 ****  STUDIES AND ANALYSIS *****
        PDA&M ANALYSIS MENS               110000    121000       0       0       0       0       0       0
        ECONOMIC ANALYSIS MENS            115000    126500       0       0       0       0       0       0
        SA OTHER MENS                          0         0       0       0       0       0       0       0

            TOTAL STUDIES AND ANALYSIS ME 225000    247500       0       0       0       0       0       0

 **** DESIGN AND DEVELOPMENT *****

 ****  ENGINEERING SERVICES  *****

 ****  TESTING  *****

                TOTAL CONTRACTOR SUPPORT  325000    357500       0       0       0       0       0       0

 ***************  OTHER AGENCY/DEPARTMENT SUPPORT ***************

        PROJECT SUPPORT SERVICES MENS          0         0       0       0       0       0       0       0
        STUDIES AND ANALYSIS MENS          50000     50000       0       0       0       0       0       0
        DESIGN SERVICES MENS                   0         0       0       0       0       0       0       0
        ENGINEERING SERVICES MENS              0         0       0       0       0       0       0       0
        FACILITIES SERVICES MENS               0         0       0       0       0       0       0       0

            TOTAL OTHER AGENCY OR DEPARTM  50000     50000       0       0       0       0       0       0

 ***************  MATERIAL AND EQUIPMENT  ***************

        OFFICE EQUIPMENT MENS                  0         0       0       0       0       0       0       0
        OFFICE SUPPLIES MENS                1000      1000       0       0       0       0       0       0
        COMPUTER EQUIPMENT MENS                0         0       0       0       0       0       0       0
        COMPUTER SUPPLIES MENS                 0         0       0       0       0       0       0       0
        COMPUTER SOFTWARE MENS                 0         0       0       0       0       0       0       0
        M&E OTHER MENS                         0         0       0       0       0       0       0       0

            TOTAL MATERIAL AND EQUIPMENT    1000      1000       0       0       0       0       0       0

 ***************  OTHER DIRECT COSTS  ***************

        TRAVEL MENS                            0     50000       0       0       0       0       0       0
        UTILITIES MENS                         0         0       0       0       0       0       0       0
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          PRINTING & REPRODUCTION MENS              0        0        0        0        0        0        0        0
          OFFICE EQUIPMENT RENTAL MENS           5000    10000        0        0        0        0        0        0
          FACILITY RENTAL & MODIFICATION ME         0        0        0        0        0        0        0        0
          TRAINING MENS                             0        0        0        0        0        0        0        0
          SITE PREPARATION MENS                     0        0        0        0        0        0        0        0
          OTHER EQUIPMENT RENTAL MENS               0        0        0        0        0        0        0        0
          MAINTENANCE MENS                          0        0        0        0        0        0        0        0
          MISCELLANEOUS MENS                        0        0        0        0        0        0        0        0

              TOTAL OTHER DIRECT CCSTS MENS      5000    60000        0        0        0        0        0        0


                 TOTAL MENS COST              1209101  1600831        0        0        0        0        0        0


***********************************************************************************************************************
*******************************************************  SOP1 COST MODULE  *******************************************

***************  PERSONNEL COSTS  ***************

****  PROJECT OFFICE PERSONNEL  *****

          PO SENIOR EXEC PERS SOP1                  0        0        1        1        0        0        0        0
          PO EXEC PERS SOP1                         0        0        2        2        0        0        0        0
          PO MGT PERS SOP1                          0        0        2        3        0        0        0        0
          PO TECH PERS SOP1                         0        0        2        4        0        0        0        0
          PO CLERICAL PERS SOP1                     0        0        2        2        0        0        0        0

          PO SENIOR EXEC PERS COST SOP1             0        0    90362    93976        0        0        0        0
          PO EXEC PERS COST SOP1                    0        0   126807   131879        0        0        0        0
          PO MGT PERS COST SOP1                     0        0    88902   138688        0        0        0        0
          PO TECH PERS COST SOP1                    0        0    60182   125178        0        0        0        0
          PO CLERICAL PERS COST SOP1                0        0    30285    31496        0        0        0        0

          TOTAL PO PERS COST SOP1                   0        0   396537   521217        0        0        0        0

****  ORGANIZATIONAL SUPPORT PERSONNEL  *****

          OS SENIOR EXEC PERS SOP1                  0        0        0        0        0        0        0        0
          OS EXEC PERS SOP1                         0        0        1        1        0        0        0        0
          OS MGT PERS SOP1                          0        0        1        1        0        0        0        0
          OS TECH PERS SOP1                         0        0        3        3        0        0        0        0
          OS CLERICAL PERS SOP1                     0        0        1        1        0        0        0        0

          OS SENIOR EXEC PERS COST SOP1             0        0        0        0        0        0        0        0
          OS EXEC PERS COST SOP1                    0        0    63403    65940        0        0        0        0
          OS MGT PERS COST SOP1                     0        0    44451    46229        0        0        0        0
          OS TECH PERS COST SOP1                    0        0    90272    93883        0        0        0        0
          OS CLERICAL PERS COST SOP1                0        0    15142    15748        0        0        0        0

          TOTAL OS PERS COST SOP1                   0        0   213270   221800        0        0        0        0

****  SUPPORT ACTIVITY PERSONNEL  *****

          SA SENIOR EXEC PERS SOP1                  0        0    .2000    .2000        0        0        0        0
          SA EXEC PERS SOP1                         0        0        1        1        0        0        0        0
          SA MGT PERS SOP1                          0        0        2        2        0        0        0        0
          SA TECH PERS SOP1                         0        0        3        3        0        0        0        0
          SA CLERICAL PERS SOP1                     0        0        1        1        0        0        0        0

          SA SENIOR EXEC PERS COST SOP1             0        0    18072    18795        0        0        0        0
          SA EXEC PERS COST SOP1                    0        0    63403    65940        0        0        0        0
          SA MGT PERS COST SOP1                     0        0    88902    92459        0        0        0        0
          SA TECH PERS COST SOP1                    0        0    90272    93883        0        0        0        0
          SA CLERICAL PERS COST SOP1                0        0    15142    15748        0        0        0        0
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FILE: IFPSREC  IFPS     A1  NAVAL POSTGRADUATE SCHOOL                                   PAGE 005
      TOTAL SA PERS COST SDP1                     0         0    275793    286825         0         0         0         0

****  EXECUTIVE REVIEW PERSONNEL *****
      ER SENIOR EXEC PERS SDP1                    0         0     .6000     .6000         0         0         0         0
      ER EXEC PERS SDP1                           0         0     .6000     .6000         0         0         0         0
      ER MGT PERS SDP1                            0         0         1         1         0         0         0         0
      ER TECH PERS SDP1                           0         0         0         0         0         0         0         0
      ER CLERICAL PERS SDP1                       0         0         0         0         0         0         0         0

      ER SENIOR EXEC PERS COST SDP1               0         0     54217     56386         0         0         0         0
      ER EXEC PERS COST SDP1                      0         0     38042     39554         0         0         0         0
      ER MGT PERS COST SDP1                       0         0     44451     46229         0         0         0         0
      ER TECH PERS COST SDP1                      0         0         0         0         0         0         0         0
      ER CLERICAL PERS COST SDP1                  0         0         0         0         0         0         0         0

      TOTAL ER PERS COST SDP1                     0         0    136710    142179         0         0         0         0

****  APPROVAL LEVEL PERSONNEL  *****
      AL SENIOR EXEC PERS SDP1                    0         0     .2000     .2000         0         0         0         0
      AL EXEC PERS SDP1                           0         0     .2000     .2000         0         0         0         0
      AL MGT PERS SDP1                            0         0         0         0         0         0         0         0
      AL TECH PERS SDP1                           0         0         0         0         0         0         0         0
      AL CLERICAL PERS SDP1                       0         0         0         0         0         0         0         0

      AL SENIOR EXEC PERS COST SDP1               0         0     18072     18795         0         0         0         0
      AL EXEC PERS COST SDP1                      0         0     12661     13188         0         0         0         0
      AL MGT PERS COST SDP1                       0         0         0         0         0         0         0         0
      AL TECH PERS COST SDP1                      0         0         0         0         0         0         0         0
      AL CLERICAL PERS COST SDP1                  0         0         0         0         0         0         0         0

      TOTAL AL PERS CGST SDP1                     0         0     30753     31983         0         0         0         0

****  ACQUISITION PROCESSING PERSONNEL  *****
      AP SENIOR EXEC PERS SDP1                    0         0         0         0         0         0         0         0
      AP EXEC PERS SDP1                           0         0         0         0         0         0         0         0
      AP MGT PERS SDP1                            0         0     .2000     .2000         0         0         0         0
      AP TECH PERS SDP1                           0         0     .3000     .3000         0         0         0         0
      AP CLERICAL PERS SDP1                       0         0     .1000     .1000         0         0         0         0

      AP SENIOR EXEC PERS COST SDP1               0         0         0         0         0         0         0         0
      AP EXEC PERS COST SDP1                      0         0         0         0         0         0         0         0
      AP MGT PERS COST SDP1                       0         0      8890      9246         0         0         0         0
      AP TECH PERS COST SDP1                      0         0      9027      9388         0         0         0         0
      AP CLERICAL PERS COST SDP1                  0         0      1514      1575         0         0         0         0

      TOTAL AP PERS CCST SDP1                     0         0     19432     20209         0         0         0         0

          TOTAL PROJECT PERS CCST SDP1            0         0   1072495   1224213         0         0         0         0


***************  CONTRACTOR SUPPORT COSTS  ****************

****  MANAGEMENT SUPPORT *****
      PROGRAM MGT SUPPORT SDP1                    0         0     86667     95333         0         0         0         0
      PERT CHART DEVELOPMENT SCP1                 0         0     90000         0         0         0         0         0
      POA&M MGT SUPPORT SDP1                      0         0     48333     53167         0         0         0         0
      MS CTHER SDP1                               0         0         0         0         0         0         0         0

      TOTAL MGT SUPPORT COSTS SDP1                0         0    225000    148500         0         0         0         0
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****  STUDIES AND ANALYSIS *****

      DATA COMM PLAN STUDY SDP1                0        0     83333    91667      0       0       0       0
      ECONOMIC ANALYSIS SDP1                   0        0    108333        0      0       0       0       0
      INTERIM CONVERSION STUDY SDP1            0        0    108333        0      0       0       0       0
      TECHNOLOGY ANALYSIS SDP1                 0        0     70000    52500      0       0       0       0
      SECURITY & PRIVACY STUDY SDP1            0        0     70000    77000      0       0       0       0
      BENCHMARK REQUIREMENTS STUDY SDP1        0        0    115000   126500      0       0       0       0
      SA OTHER SDP1                            0        0         0        0      0       0       0       0

      TOTAL STUDIES AND ANALYSIS SDP1          0        0    555000   347667      0       0       0       0

**** DESIGN AND DEVELOPMENT *****

      PRELIM ARCHITECTURAL STRATEGY SDP        0        0     96667   106333      0       0       0       0
      D&D OTHER SDP1                           0        0         0        0      0       0       0       0

          TOTAL DESIGN AND DEVELOPMENT         0        0     96667   106333      0       0       0       0

****  ENGINEERING SERVICES  *****

****  TESTING  *****

          TOTAL CONTRACTOR SUPPORT COST        0        0    780000   496167      0       0       0       0

***************  OTHER AGENCY/DEPARTMENT SUPPORT ***************

      PROJECT SUPPORT SERVICES SDP1            0        0         0        0      0       0       0       0
      STUDIES AND ANALYSIS SDP1                0        0    100000   100000      0       0       0       0
      DESIGN SERVICES SDP1                     0        0         0        0      0       0       0       0
      ENGINEERING SERVICES SDP1                0        0         0        0      0       0       0       0
      FACILITIES SERVICES SDP1                 0        0         0        0      0       0       0       0

          TOTAL OTHER AGENCY OR DEPARTM        0        0    100000   100000      0       0       0       0

***************  MATERIAL AND EQUIPMENT  ***************

      OFFICE EQUIPMENT SDP1                    0        0     10000    10000      0       0       0       0
      OFFICE SUPPLIES SDP1                     0        0      2000     2000      0       0       0       0
      COMPUTER EQUIPMENT SDP1                  0        0         0        0      0       0       0       0
      COMPUTER SUPPLIES SDP1                   0        0         0        0      0       0       0       0
      COMPUTER SOFTWARE SDP1                   0        0         0        0      0       0       0       0
      M&E OTHER SDP1                           0        0         0        0      0       0       0       0

          TOTAL MATERIAL AND EQUIPMENT         0        0     12000    12000      0       0       0       0

***************  OTHER DIRECT COSTS  ***************

      TRAVEL SDP1                              0        0     50000    60000      0       0       0       0
      UTILITIES SDP1                           0        0         0        0      0       0       0       0
      PRINTING & REPRODUCTION SDP1             0        0     10000    10000      0       0       0       0
      OFFICE EQUIPMENT RENTAL SDP1             0        0         0        0      0       0       0       0
      FACILITY RENTAL & MODIFICATION SO        0        0         0        0      0       0       0       0
      TRAINING SDP1                            0        0         0        0      0       0       0       0
      SITE PREPARATION SDP1                    0        0         0        0      0       0       0       0
      OTHER EQUIPMENT RENTAL SDP1              0        0         0        0      0       0       0       0
      MAINTENANCE SDP1                         0        0         0        0      0       0       0       0
      MISCELLANEOUS SDP1                       0        0         0        0      0       0       0       0
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         TOTAL OTHER DIRECT CCSTS SOP1          0         0     60000     70J00         0         0         0         0


            TOTAL SOP1 COST                     0         0   2024495   1902379         0         0         0         0



**************************************************************************************************************
*********************************************** SOP2 COST MODULE *********************************************

************** PERSONNEL COSTS ***************

****  PROJECT OFFICE PERSONNEL  *****
        PO SENIOR EXEC PERS SDP2                0         0         0         0         1         1         0         0
        PO EXEC PERS SDP2                       0         0         0         0         2         2         0         0
        PO MGT PERS SOP2                        0         0         0         0         3         3         0         0
        PO TECH PERS SDP2                       0         0         0         0         4         4         0         0
        PO CLERICAL PERS SOP2                   0         0         0         0         2         2         0         0

        PO SENIOR EXEC PERS COST SDP2           0         0         0         0     97735    101644         0         0
        PO EXEC PERS COST SOP2                  0         0         0         0    137154    142640         0         0
        PO MGT PERS COST SOP2                   0         0         0         0    144235    150005         0         0
        PO TECH PERS COST SOP2                  0         0         0         0    130185    135392         0         0
        PO CLERICAL PERS COST SDP2              0         0         0         0     32756     34066         0         0

        TOTAL PO PERS COST SDP2                 0         0         0         0    542066    563748         0         0

****  ORGANIZATIONAL SUPPORT PERSONNEL  *****
        OS SENIOR EXEC PERS SDP2                0         0         0         0         0         0         0         0
        OS EXEC PERS SDP2                       0         0         0         0         1         1         0         0
        OS MGT PERS SOP2                        0         0         0         0         1         1         0         0
        OS TECH PERS SDP2                       0         0         0         0         3         3         0         0
        OS CLERICAL PERS SDP2                   0         0         0         0         1         1         0         0

        OS SENIOR EXEC PERS COST SDP2           0         0         0         0         0         0         0         0
        OS EXEC PERS COST SDP2                  0         0         0         0     68577     71320         0         0
        OS MGT PERS COST SOP2                   0         0         0         0     48078     50002         0         0
        OS TECH PERS COST SOP2                  0         0         0         0     97639    101544         0         0
        OS CLERICAL PERS COST SDP2              0         0         0         0     16378     17033         0         0

        TOTAL OS PERS COST SOP2                 0         0         0         0    230672    239899         0         0

****  SUPPORT ACTIVITY PERSONNEL  *****
        SA SENIOR EXEC PERS SOP2                0         0         0         0         1         1         0         0
        SA EXEC PERS SDP2                       0         0         0         0         1         1         0         0
        SA MGT PERS SOP2                        0         0         0         0         2         2         0         0
        SA TECH PERS SDP2                       0         0         0         0         7         8         0         0
        SA CLERICAL PERS SDP2                   0         0         0         0         1         2         0         0

        SA SENIOR EXFC PERS COST SDP2           0         0         0         0     97735    101644         0         0
        SA EXEC PERS COST SDP2                  0         0         0         0     68577     71320         0         0
        SA MGT PERS COST SOP2                   0         0         0         0     96157    100003         0         0
        SA TECH PERS COST SOP2                  0         0         0         0    227824    270785         0         0
        SA CLERICAL PERS COST SOP2              0         0         0         0     16378     34066         0         0

        TOTAL SA PERS COST SOP2                 0         0         0         0    506671    577819         u         0

****  EXECUTIVE REVIEW PERSONNEL *****
        ER SENIOR EXEC PERS SDP2                0         0         0         0         1         1         0         0
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FILE: IFPSREC  IFPS     A1  NAVAL POSTGRADUATE SCHOOL                                          PAGE 008

        ER EXEC PERS SOP2                        0       0       0       0         1       1       0       0
        ER MGT PERS SOP2                         0       0       0       0         0       0       0       0
        ER TECH PERS SOP2                        0       0       0       0         0       0       0       0
        ER CLERICAL PERS SOP2                    0       0       0       0         1       1       0       0

        ER SENIOR EXEC PERS COST SOP2            0       0       0       0     97735  101644       0       0
        ER EXEC PERS COST SOP2                   0       0       0       0     68577   71320       0       0
        ER MGT PERS COST SOP2                    0       0       0       0         0       0       0       0
        ER TECH PERS COST SOP2                   0       0       0       0         0       0       0       0
        ER CLERICAL PERS COST SOP2               0       0       0       0     16378   17033       0       0

        TOTAL ER PERS COST SOP2                  0       0       0       0    182690  189998       0       0

****  APPROVAL LEVEL PERSONNEL  *****
        AL SENIOR EXEC PERS SOP2                 0       0       0       0     .3000   .3000       0       0
        AL EXEC PERS SOP2                        0       0       0       0     .3000   .3000       0       0
        AL MGT PERS SOP2                         0       0       0       0         1       1       0       0
        AL TECH PERS SOP2                        0       0       0       0         0       0       0       0
        AL CLERICAL PERS SOP2                    0       0       0       0         0       0       0       0

        AL SENIOR EXEC PERS COST SOP2            0       0       0       0     29321   30493       0       0
        AL EXEC PERS COST SOP2                   0       0       0       0     20573   21396       0       0
        AL MGT PERS COST SOP2                    0       0       0       0     48078   50002       0       0
        AL TECH PERS COST SOP2                   0       0       0       0         0       0       0       0
        AL CLERICAL PERS COST SOP2               0       0       0       0         0       0       0       0

        TOTAL AL PERS COST SOP2                  0       0       0       0     97972  101891       0       0

****  ACQUISITION PROCESSING PERSONNEL  *****
        AP SENIOR EXEC PERS SOP2                 0       0       0       0         0       0       0       0
        AP EXEC PERS SOP2                        0       0       0       0         0       0       0       0
        AP MGT PERS SOP2                         0       0       0       0         1       1       0       0
        AP TECH PERS SOP2                        0       0       0       0         1       1       0       0
        AP CLERICAL PERS SOP2                    0       0       0       0         1       1       0       0

        AP SENIOR EXEC PERS COST SOP2            0       0       0       0         0       0       0       0
        AP EXEC PERS COST SOP2                   0       0       0       0         0       0       0       0
        AP MGT PERS COST SOP2                    0       0       0       0     48078   50002       0       0
        AP TECH PERS COST SOP2                   0       0       0       0     32546   33848       0       0
        AP CLERICAL PERS COST SOP2               0       0       0       0     16378   17033       0       0

        TOTAL AP PERS COST SOP2                  0       0       0       0     97003  100883       0       0

            TOTAL PROJECT PERS CCST SOP2         0       0       0       0   1657074 1774238       0       0

***************  CONTRACTOR SUPPORT COSTS  ****************

****  MANAGEMENT SUPPORT *****
        PROGRAM MGT SUPPORT SOP2                 0       0       0       0    100000  110000       0       0
        DOCUMENTATION MGT SUPPORT SOP2           0       0       0       0     36667   40333       0       0
        MS OTHER SOP2                            0       0       0       0         0       0       0       0

            TOTAL MGT SUPPORT COSTS SOP2         0       0       0       0    136667  150333       0       0

****  STUDIES AND ANALYSIS *****
        CONFIGURATION MGT STUDY SOP2             0       0       0       0    100000  110000       0       0
        ECONOMIC ANALYSIS SOP2                   0       0       0       0     63333   69667       0       0
        LOGISTICS STUDY SOP2                     0       0       0       0    116667  128333       0       0
        TECHNOLOGY ANALYSIS SOP2                 0       0       0       0     76667   84333       0       0
        SECURITY & PRIVACY STUDY SOP2            0       0       0       0     70000       0       0       0
        TRAINING REQUIREMENTS STLDY SOP2         0       0       0       0     76667       0       0       0
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          STANDARDIZATION STUDY SDP2              0        0        0        0        0    90000        0        0
          INTEROPERABILITY ANALYSIS SDP2          0        0        0        0        0    73333        0        0
          TEST & EVAL RQMTS STUDY SDP2            0        0        0        0   108333   119167        0        0
          SA OTHER SDP2                           0        0        0        0        0        0        0        0

              TOTAL STUDIES AND ANALYSIS SD       0        0        0        0   611667   674833        0        0

 **** DESIGN AND DEVELOPMENT *****

          ARCHITECTURAL STRATEGY PLAN SDP2        0        0        0        0    98333   108167        0        0
          CONVERSION PLAN SDP2                    0        0        0        0   133333    66667        0        0
          DATABASE DESIGN SDP2                    0        0        0        0   123333   135667        0        0
          PHYSICAL SYS DESIGN SDP2                0        0        0        0   123333   135667        0        0
          DATA COMM PLAN SDP2                     0        0        0        0        0   113333        0        0
          HW & SW MAINTENANCE PLAN SDP2           0        0        0        0   123333        0        0        0
          FACILITIES UPGRADE PLAN SDP2            0        0        0        0        0    90000        0        0
          BENCHMARK PLAN SDP2                     0        0        0        0   126667   139333        0        0
          D&D OTHER SDP2                          0        0        0        0        0        0        0        0

          TOTAL DESIGN AND DEVELOPMENT SDP2       0        0        0        0   728333   788833        0        0

 ****  ENGINEERING SERVICES  *****

 ****  TESTING  *****

                  TOTAL CONTRACTOR SUPPORT        0        0        0        0   748333   825167        0        0

 ***************  OTHER AGENCY/DEPARTMENT SUPPORT ***************

          PROJECT SUPPORT SERVICES SDP2           0        0        0        0    20000    20000        0        0
          STUDIES AND ANALYSIS SDP2               0        0        0        0        0    50000        0        0
          DESIGN SERVICES SDP2                    0        0        0        0    30000    40000        0        0
          ENGINEERING SERVICES SDP2               0        0        0        0        0        0        0        0
          FACILITIES SERVICES SDP2                0        0        0        0        0        0        0        0

              TOTAL OTHER AGENCY OR DEPARTM       0        0        0        0    50000   110000        0        0

 ***************  MATERIAL AND EQUIPMENT  ***************

          OFFICE EQUIPMENT SDP2                   0        0        0        0     5000        0        0        0
          OFFICE SUPPLIES SDP2                    0        0        0        0     3000     3000        0        0
          COMPUTER EQUIPMENT SDP2                 0        0        0        0    50000    20000        0        0
          COMPUTER SUPPLIES SDP2                  0        0        0        0    10000     2000        0        0
          COMPUTER SOFTWARE SDP2                  0        0        0        0        0        0        0        0
          M&E OTHER SDP2                          0        0        0        0        0        0        0        0

              TOTAL MATERIAL AND EQUIPMENT        0        0        0        0    68000    25000        0        0

 ***************  OTHER DIRECT COSTS  ***************

          TRAVEL SDP2                             0        0        0        0    60000    60000        0        0
          UTILITIES SDP2                          0        0        0        0        0        0        0        0
          PRINTING & REPRODUCTION SDP2            0        0        0        0     5000    10000        0        0
          OFFICE EQUIPMENT RENTAL SDP2            0        0        0        0        0        0        0        0
          FACILITY RENTAL & MODIFICATION SD       0        0        0        0        0        0        0        0
          TRAINING SDP2                           0        0        0        0    10000    15000        0        0
          SITE PREPARATION SDP2                   0        0        0        0        0        0        0        0
          OTHER EQUIPMENT RENTAL SDP2             0        0        0        0        0        0        0        0
          MAINTENANCE SDP2                        0        0        0        0        0        0        0        0
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        MISCELLANEOUS SOP2                   0         0         0         0      ,  0         0         0         0
            TOTAL OTHER DIRECT COSTS SOP2    0         0         0         0     75000     85000         0         0


                TOTAL SOP2 COST              0         0         0         0   2598407   2819405         0         0


**********************************************************************************************************************
************************************************  SOP3 COST MODULE  ***************************************************

***************  PERSONNEL COSTS  ***************

****  PROJECT OFFICE PERSONNEL  *****

        PO SENIOR EXEC PERS SOP3             0         0         0         0         0         0         1         1
        PO EXEC PERS SOP3                    0         0         0         0         0         0         2         2
        PO MGT PERS SOP3                     0         0         0         0         0         0         3         3
        PO TECH PERS SOP3                    0         0         0         0         0         0         5         5
        PO CLERICAL PERS SOP3                0         0         0         0         0         0         2         2

        PO SENIOR EXEC PERS COST SOP3        0         0         0         0         0         0    105710    109939
        PO EXEC PERS COST SOP3               0         0         0         0         0         0    148346    154280
        PO MGT PERS COST SOP3                0         0         0         0         0         0    156005    162245
        PO TECH PERS COST SOP3               0         0         0         0         0         0    176010    183050
        PO CLERICAL PERS COST SOP3           0         0         0         0         0         0     35429     36846

        TOTAL PO PERS COST SOP3              0         0         0         0         0         0    621500    646360

****  ORGANIZATIONAL SUPPORT PERSONNEL  *****

        OS SENIOR EXEC PERS SOP3             0         0         0         0         0         0         0         0
        OS EXEC PERS SOP3                    0         0         0         0         0         0         1         1
        OS MGT PERS SOP3                     0         0         0         0         0         0         2         2
        OS TECH PERS SOP3                    0         0         0         0         0         0         4         4
        OS CLERICAL PERS SOP3                0         0         0         0         0         0         1         1

        OS SENIOR EXEC PERS COST SOP3        0         0         0         0         0         0         0         0
        OS EXEC PERS COST SOP3               0         0         0         0         0         0     74173     77140
        OS MGT PERS COST SOP3                0         0         0         0         0         0    104003    108163
        OS TECH PERS COST SOP3               0         0         0         0         0         0    140808    146440
        OS CLERICAL PERS COST SOP3           0         0         0         0         0         0     17714     18423

        TOTAL OS PERS COST SOP3              0         0         0         0         0         0    336699    350167

****  SUPPORT ACTIVITY PERSONNEL  *****

        SA SENIOR EXEC PERS SOP3             0         0         0         0         0         0     .5000     .5000
        SA EXEC PERS SOP3                    0         0         0         0         0         0         1         2
        SA MGT PERS SOP3                     0         0         0         0         0         0         2         3
        SA TECH PERS SOP3                    0         0         0         0         0         0         7         7
        SA CLERICAL PERS SOP3                0         0         0         0         0         0         2         2

        SA SENIOR EXEC PERS COST SOP3        0         0         0         0         0         0     52855     54969
        SA EXEC PERS COST SOP3               0         0         0         0         0         0     74173    154280
        SA MGT PERS COST SOP3                0         0         0         0         0         0    104003    162245
        SA TECH PERS COST SOP3               0         0         0         0         0         0    246414    256271
        SA CLERICAL PERS COST SOP3           0         0         0         0         0         0     35429     36846

        TOTAL SA PERS COST SOP3              0         0         0         0         0         0    512874    664611

****  EXECUTIVE REVIEW PERSONNEL  *****

        ER SENIOR EXEC PERS SOP3             0         0         0         0         0         0         1         1
        ER EXEC PERS SOP3                    0         0         0         0         0         0         1         1
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        ER MGT PERS SDP3                        0       0       0       0       0       0        1        1
        ER TECH PERS SDP3                       0       0       0       0       0       0        0        0
        ER CLERICAL PERS SOP3                   0       0       0       0       0       0        1        1

        ER SENIOR EXEC PERS COST SDP3           0       0       0       0       0       0   105710   109939
        ER EXEC PERS COST SDP3                  0       0       0       0       0       0    74173    77140
        ER MGT PERS COST SDP3                   0       0       0       0       0       0    52002    54082
        ER TECH PERS COST SDP3                  0       0       0       0       0       0        0        0
        ER CLERICAL PERS COST SDP3              0       0       0       0       0       0    17714    18423

        TOTAL ER PERS COST SDP3                 0       0       0       0       0       0   249599   259583

****  APPROVAL LEVEL PERSONNEL  *****

        AL SENIOR EXEC PERS SDP3                0       0       0       0       0       0    .3000    .3000
        AL EXEC PERS SDP3                       0       0       0       0       0       0    .3000    .3000
        AL MGT PERS SOP3                        0       0       0       0       0       0        0        0
        AL TECH PERS SDP3                       0       0       0       0       0       0        0        0
        AL CLERICAL PERS SDP3                   0       0       0       0       0       0        0        0

        AL SENIOR EXEC PERS COST SDP3           0       0       0       0       0       0    31713    32982
        AL EXEC PERS COST SDP3                  0       0       0       0       0       0    22252    23142
        AL MGT PERS COST SDP3                   0       0       0       0       0       0        0        0
        AL TECH PERS COST SOP3                  0       0       0       0       0       0        0        0
        AL CLERICAL PERS COST SOP3              0       0       0       0       0       0        0        0

        TOTAL AL PERS COST SDP3                 0       0       0       0       0       0    53965    56124

****  ACQUISITION PROCESSING PERSONNEL  *****

        AP SENIOR EXEC PERS SDP3                0       0       0       0       0       0    .1000    .1000
        AP EXEC PERS SDP3                       0       0       0       0       0       0    .2000    .2000
        AP MGT PERS SDP3                        0       0       0       0       0       0        1        1
        AP TECH PERS SDP3                       0       0       0       0       0       0        2        2
        AP CLERICAL PERS SDP3                   0       0       0       0       0       0        1        1

        AP SENIOR EXEC PERS COST SDP3           0       0       0       0       0       0    10571    10994
        AP EXEC PERS COST SDP3                  0       0       0       0       0       0    14835    15428
        AP MGT PERS COST SOP3                   0       0       0       0       0       0    52002    54082
        AP TECH PERS COST SDP3                  0       0       0       0       0       0    70404    73220
        AP CLERICAL PERS COST SOP3              0       0       0       0       0       0    17714    18423

        TOTAL AP PERS CCST SDP3                 0       0       0       0       0       0   165526   172147

            TOTAL PROJECT PERS CCST SOP3        0       0       0       0       0       0  1940164  2148992


***************  CONTRACTOR SUPPORT COSTS  ***************

****  MANAGEMENT SUPPORT *****

        PROGRAM MGT SUPPORT SOP3                0       0       0       0       0       0    96667   106333
        DOCUMENTATION MGT SUPPORT SDP3          0       0       0       0       0       0    61667    67833
        INTEGRATION MGT SUPPORT SOP3            0       0       0       0       0       0    98333   108167
        MS OTHER SOP3                           0       0       0       0       0       0        0        0

        TOTAL MGT SUPPORT COSTS SDP3            0       0       0       0       0       0   256667   282333

****  STUDIES AND ANALYSIS *****

        CONFIGURATION MGT PLAN SOP3             0       0       0       0       0       0   115000   126500
        ECONCMIC ANALYSIS SDP3                  0       0       0       0       0       0    50000    55000
        LOGISTICS PLAN SDP3                     0       0       0       0       0       0   106667        0
        SITE PREPARATION PLAN SOP3              0       0       0       0       0       0   101667        0
        SECURITY & PRIVACY PLAN SDP3            0       0       0       0       0       0    95000        0
        TRAINING PLAN SDP3                      0       0       0       0       0       0        0    83333
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        STANDARDIZATION PLAN SOP3            0       0       0       0       0       0    90000        0
        TEST & EVALUATION PLAN SCP3          0       0       0       0       0       0        0   100000
        SA CTHER SDP3                        0       0       0       0       0       0        0        0

        TOTAL STUDIES AND ANALYSIS SDP3      0       0       0       0       0       0   558333   364833

 **** DESIGN AND DEVELOPMENT *****

        HW & SW ACCEPTANCE TEST PLAN SDP3    0       0       0       0       0       0        0    86667
        ARCHITECTURAL STRATEGY PLAN SDP3     0       0       0       0       0       0    76667        0
        CONVERSION PLAN SOP3                 0       0       0       0       0       0    80000    88000
        DATABASE DESIGN SDP3                 0       0       0       0       0       0   150000   165000
        PHYSICAL SYS DESIGN SOP3             0       0       0       0       0       0   150000   165000
        DATA COMM PLAN SDP3                  0       0       0       0       0       0   105000        0
        HW & SW MAINTENANCE PLAN SDP3        0       0       0       0       0       0    88333    97167
        FACILITIES UPGRADE PLAN SOP3         0       0       0       0       0       0        0   113333
        BENCHMARK PLAN SDP3                  0       0       0       0       0       0    80000    88000
        O&O CTHER SOP3                       0       0       0       0       0       0        0        0

        TOTAL DESIGN AND DEVELOPMENT SDP3    0       0       0       0       0       0   730000   803167

 ****  ENGINEERING SERVICES  *****

        SW ENGINEERING SERVICES SDP3         0       0       0       0       0       0   146667   161333
        INSTALL PROTOTYPE HW & SW SOP3       0       0       0       0       0       0   350000   385000
        ES CTHER SOP3                        0       0       0       0       0       0        0        0

        TOTAL ENGINEERING SERVICES SDP3      0       0       0       0       0       0   496667   546333

 ****  TESTING/TRAINING  *****

        VENDOR SW TRAINING SOP3              0       0       0       0       0       0    58333    64167
        T&T CTHER SOP3                       0       0       0       0       0       0        0        0

        TOTAL TESTING AND TRAINING SCP3      0       0       0       0       0       0    58333    64167
            TOTAL CONTRACTOR SUPPORT COST    0       0       0       0       0       0  2100000  2060833


 ***************  OTHER AGENCY/DEPARTMENT SUPPORT ****************

        PROJECT SUPPORT SERVICES SOP3        0       0       0       0       0       0    50000    50000
        STUDIES AND ANALYSIS SOP3            0       0       0       0       0       0        0        0
        DESIGN SERVICES SOP3                 0       0       0       0       0       0    75000    75000
        ENGINEERING SERVICES SOP3            0       0       0       0       0       0    50000   100000
        FACILITIES SERVICES SDP3             0       0       0       0       0       0        0        0

           TOTAL OTHER AGENCY OR DEPARTME    0       0       0       0       0       0   175000   225000


 ***************  MATERIAL AND ECUIPMENT  ****************

        OFFICE EQUIPMENT SOP3                0       0       0       0       0       0     3000     2000
        OFFICE SUPPLIES SOP3                 0       0       0       0       0       0     3000     3000
        COMPUTER EQUIPMENT SOP3              0       0       0       0       0       0     2000     2000
        COMPUTER SUPPLIES SDP3               0       0       0       0       0       0     2000     2000
        COMPUTER SOFTWARE SDP3               0       0       0       0       0       0        0        0
        M&E CTHER SDP3                       0       0       0       0       0       0        0        0

            TOTAL MATERIAL AND ECUIPMENT     0       0       0       0       0       0    10000     9000


 ***************  OTHER DIRECT COSTS ****************
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FILE: IFPSREC  IFPS     A1  NAVAL POSTGRADUATE SCHOOL                                               PAGE 013

        TRAVEL SOP3                             0        0        0        0        0        0   100000   100000
        UTILITIES SOP3                          0        0        0        0        0        0     5000     5000
        PRINTING & REPRODUCTION SOP3            0        0        0        0        0        0     5000     5000
        OFFICE EQUIPMENT RENTAL SOP3            0        0        0        0        0        0        0        0
        FACILITY RENTAL & MODIFICATION SO       0        0        0        0        0        0   250000   200000
        TRAINING SOP3                           0        0        0        0        0        0    15000    15000
        SITE PREPARATION SOP3                   0        0        0        0        0        0    20000    50000
        OTHER EQUIPMENT RENTAL SCP3             0        0        0        0        0        0        0        0
        MAINTENANCE SOP3                        0        0        0        0        0        0        0        0
        MISCELLANEOUS SOP3                      0        0        0        0        0        0        0        0

          TOTAL OTHER DIRECT CCSTS SOP3         0        0        0        0        0        0   395000   375000


             TOTAL SOP3 COST                    0        0        0        0        0        0  4620164  4818825


                TOTAL PROJECT COST        1209101  1600831  2024495  1902379  2598407  2819405  4620164  4818825


           |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
           ||                                                                       ||
           ||    THE FCLLOWING SECTION COMPUTES THE EFFECT CF LCST CPPORTUNITY COSTS. ||
           ||    OPPORTUNITY COSTS ARE THE DISCOUNTED PROJECTED YEARLY COST SAVINGS   ||
           ||    ATTRIBUTED TO THE NEW SYSTEM.  THE PROJECTED COST SAVINGS STREAM IS  ||
           ||    DISCOUNTED BACK TO THE FOURTH PROJECT YEAR.  THIS IS TO PROVIDE A    ||
           ||    COMPARISON WITH THE PRIVATE SECTOR WHOSE ACQUISITION AND INSTALLATION||
           ||    TIME FOR NEW ADP SYSTEMS IS APPROXIMATELY THREE YEARS.               ||
           ||                                                                       ||
           |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||

****************  OPPORTUNITY COST COMPUTATION  ****************

        YR COST SAVINGS START                  12       12       12       12       12       12       12       12
        FIRST YR COST SAVINGS                   0        0        0  1000000        0        0        0        0
        SECOND YR COST SAVINGS                  0        0        0        0  2000000        0        0        0
        THIRD YR COST SAVINGS                   0        0        0        0        0  1000000        0        0
        FOURTH YR COST SAVINGS                  0        0        0        0        0        0  2000000        0
        FIFTH YR COST SAVINGS                   0        0        0        0        0        0        0  3000000
        NEW SYSTEM DEPLCY YR                    3        3        3        3        3        3        3        3
        INTEREST RATE                       .1000    .1000    .1000    .1000    .1000    .1000    .1000    .1000
        MATURITY VALUE FACTOR1              2.358    2.358    2.358    2.358    2.358    2.358    2.358    2.358
        NUMBER OF PERIODS                       9        9        9        9        9        9        9        9
        PRESENT VALUE FACTOR1               .4241    .4241    .4241    .4241    .4241    .4241    .4241    .4241
        COMPOUND FACTOR                     1.100    1.100    1.100    1.100    1.100    1.100    1.100    1.100
        MATURITY VALUE FACTOR2              2.144    2.144    2.144    2.144    2.144    2.144    2.144    2.144
        PRESENT VALUE FACTOR2               .4665    .4665    .4665    .4665    .4665    .4665    .4665    .4665
        MATURITY VALUE FACTOR3              1.949    1.949    1.949    1.949    1.949    1.949    1.949    1.949
        PRESENT VALUE FACTOR3               .5132    .5132    .5132    .5132    .5132    .5132    .5132    .5132
        MATURITY VALUE FACTOR4              1.772    1.772    1.772    1.772    1.772    1.772    1.772    1.772
        PRESENT VALUE FACTOR4               .5645    .5645    .5645    .5645    .5645    .5645    .5645    .5645
        MATURITY VALUE FACTOR5              1.611    1.611    1.611    1.611    1.611    1.611    1.611    1.611
        PRESENT VALUE FACTOR5               .6209    .6209    .6209    .6209    .6209    .6209    .6209    .6209
        ADJUSTED SAVINGS FIRST DEPLOY YR        0        0        0   424098        0        0        0        0
        ADJUSTED SAVINGS SECOND DEPLCY YR       0        0        0        0   933015        0        0        0
        ADJUSTED SAVINGS THIRD DEPLOY YR        0        0        0        0        0   513158        0        0
        ADJUSTED SAVINGS FOURTH DEPLOY YR       0        0        0        0        0        0  1128948        0
        ADJUSTED SAVINGS FIFTH DEPLOY YR        0        0        0        0        0        0        0  1862764


        OPPORTUNITY COSTS                       0        0        0   424098   933015   513158  1128948  1862764

**********************************************************************************************************
*************************************  PROJECT TOTAL COST SUMMARY  **************************************
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FILE: IFPSREC  IFPS    A1  NAVAL POSTGRADUATE SCHOOL                                          PAGE 014

        PROJECT OFFICE PERS COST              352621   366726   396537   521217   542066   563748   621500   646360
        ORGANIZATIONAL SUPPORT PERS COST      141538   205067   213270   221800   230672   239899   336699   350167
        SUPPORT ACTIVITY PERS COST            181821   349118   275793   286825   506671   577819   512874   664611
        EXECUTIVE REVIEW PERS COST            140396   146012   136710   142179   182690   169998   249599   259583
        APPROVAL LEVEL PERS COST               11724    29570    30753    31983    97972   101891    53965    56124
        ACQUISITION PROCESSING PERS COST           0    35838    19432    20209    97003   100883   165526   172147

        TOTAL PROJECT PERS COST               828101  1132331  1072495  1224213  1657074  1774238  1940164  2148992

        MGT SUPPORT COSTS                     100000   110000   225000   148500   136667   150333   256667   282333
        STUDIES AND ANALYSIS COST             225000   247500   555000   347667   611667   674833   558333   364833
        DESIGN AND DEVELOPMENT COST                0        0    96667   106333   728333   788833   730000   803167
        ENGINEERING SERVICES COST                  0        0        0        0        0        0   496667   546333
        TESTING AND TRAINING COST                  0        0        0        0      . 0        0    58333    64167

        TOTAL CONTRACTOR SUPPORT COST         325000   357500   780000   496167   748333   825167  2100000  2060833

        TOTAL OTHER AGENCY OR DEPARTMENT       50000    50000   100000   100000    50000   110000   175000   225000

        TOTAL MATERIAL AND EQUIPMENT COST       1000     1000    12000    12000    68000    25000    10000     9000

        TOTAL OTHER DIRECT COSTS                5000    60000    60000    70000    75000    85000   395000   375000

            TOTAL PROJECT COST               1209101  1600831  2024495  1902379  2598407  2819405  4620164  4818825

            OPPORTUNITY COSTS                      0        0        0   424098   933015   513158  1128948  1862764

            ADJUSTED TOTAL PROJECT COST      1209101  1600831  2024495  2326477  3531422  3332563  5749112  6681589
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LIST OF REFERENCES

1. National Bureau of Standards Special Publication 500-97, *Federal ADP Equipment: A Compilation of Statistics - 1981*.

2. President's Private Sector Survey on Cost Control, *Task Force Report on Automated Data Processing*, 13 June 1983.

3. Karst, K. A., *The Cost of Competitive Automated Data Processing Acquistion*, research paper submitted to Air Command and Staff College, Air University, Maxwell AFB, Alabama, April 1979.

4. Naval Data Automation Command Slide Presentation, *Life Cycle Management of Automated Information Systems*, November 1983.

5. Arthur Young and Company, *An Analysis of Private Industry Low Cost Computing Strategies*, Washington, D.C., 30 November 1982.

6. Office of Federal Procurement Policy, *Proposal for a Uniform Federal Procurement System*, 26 February 1982.

7. Report of the Committee on Governmental Affairs, United States Senate, Report No. 95-715, *Federal Acquisition Act of 1977*, 22 March 1978.

8. Booze, Allen and Hamilton Incorporated, *Defense ADP Acquisition Study*, Washington, D. C., 30 November 1981.

9. Office of Management and Budget, *Acquisition Team Report of Federal Data Processing Reorganization*, 20 June 1978.

10. Chief of Naval Operations Publication OPNAV P160-S6-83, *MAPTIS Program Life Cycle Management (LCM) Standard*, October, 1983.

11. Normile, J. J. and Sharum, B. J., "Navy Acquisition of Large Scale Computer Systems," *Newsletter*, November, 1981.

12. ADPSCNOTE 4235, *Contracting for ADPE*, 15 June 1981.

13. FIPS PUB 42-1, *Guidelines for Benchmarking ADP Systems in the Competitive Procurement Environment*, 1977.

14. FIPS PUB 42-2, *Guideline on Constructing Benchmarks for ADP Acquisitions*, 18 September 1980.

15. Federal Procurement Regulations 1-4.11, *Use and Specifications of RTE in ADP System Acquisitions*, August 1979.

16. Federal Property Management Regulations, Code of Federal Regulations, *Title 41*, *Chapter 101*.

17. SECNAVINST 5237.1, *Automatic Data Processing Equipment Reutilization Program*, 7 July 1975.

18. SECNAVINST 5230.6A, *Delegation of ADP Approval Authority and Acquisition/Development Thresholds*, 31 August 1981.

19. Federal Procurement Regulations, Code of Federal Regulations, *Title 41*, *Chapter 1*.

20. SECNAVINST 5236.3, *Privacy, Funding, and Other Certifications Required in Procurement of ADPE and Services*, 20 May 1976.

21. Defense Acquisition Circular 76-27, *Automatic Data Processing (ADP) Contracting*, 15 May 1981.

22. ADPSONOTE 5236, *ADP Proposal, Evaluation and Selection Guidance*, 30 March 1981.

23. SECNAVINST 10462.18, *Department of the Navy Automatic Data Processing Review and Evaluation Program*, 5 April 1971.

24. COMNAVDAC memo Ser 10-261/1467, *ADP Contract Administration by the Automatic Data Processing Selection Office*, 26 June 1981.

25. Pollock, K. A., *General Accounting Office Testimony to Defense Subcommittee, Committee on Appropriations, United States House of Representatives*, Washington, D. C., 21 June 1983.

26. Joint Conference Report on the 1984 Defense Appropriation Bill, *Title III*, *Operation and Maintenance*, Washington, D. C., 1983.

27. EXECUCOM Systems Corporation, *IFPS User's Manual Release 9.0*, Austin, Texas, 1983.

28. GAO Report, *Non-Federal Computer Acquisition Practices Provide Useful Information for Streamlining Federal Methods*, 2 October 1981.

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